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ORIGINAL COMMUNICATIONS.

CONDENSED MILKS AND THEIR INFLUENCE ON THE HEALTH OF INFANTS.*

BY T. EUSTACE HILL, M.B., B.SC. (PUBL. HEALTH), EDIN., A.I.C.

Mr. President and Gentlemen,

I venture to bring this subject, in which I shall touch on Infant Feeding generally, before you, as being one of very great importance, both to medical men and the community at large. It is remarkable what little attention has been paid to this important question, how small has been its investigation, and with what erroneous ideas it has frequently been entered upon. The literature on the subject is to a great extent based on faulty knowledge, and antiquated methods of analysis, with the result of course of incorrect conclusions. When we consider the enormous mortality of children under one year of age, many of them succumbing to diseases which are preventable, and due to carelessness or ignorance of their dietectic requirements, it is extraordinary and a reflection on civilized communities, that more has not been done to throw light on this subject and instruct the people in the proper management of their children. Not only is a great loss of life incurred through improper infant feeding, but also great numbers who survive their early ailments grow up shewing marked evidence of early malnutrition in their rachitic tendencies, blanched faces, and general want of proper osseous and muscular development.

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* Read before the Midland Medical Society.

One has only to look at the Registrar-General's returns to see the enormous infant mortality in the country, especially in the manufacturing towns, where dry nursing is most common, owing to the employment of women in factories or other places away from home. Take our own town Birmingham for instance, and we find that out of every 1,000 infants born, 170 die before they reach the age of one year. This is a dreadful state of things which every effort should be made to ameliorate, especially when we consider the remarkable fact that while the general death rate of the country has so improved of late years, little or no reduction of the infantile death rate has taken place. That it is preventable to a great extent is evidenced by the fact that the more the mothers are employed away from home the greater is the infant mortality, owing, no doubt, to the children being deprived of the breast and made to feed on substances utterly unfit for them. Thus in Blackburn, Preston, and other mill towns where women are largely employed, the infant mortality reaches a much higher figure than even in Birmingham.

I do not mean to say that a great deal of the infant mortality is not due to other causes than improper dry nursing, but many affections, such as diarrhœa, teething, and convulsions are to a considerable extent produced or influenced by it, and would be greatly diminished were parents made to understand the necessity of giving proper food to their children. I am afraid that in this respect we, as a profession, are not quite free from blame, for I think that in many cases the medical attendant does not sufficiently impress upon the mother in cases of dry nursing the care that should be taken with the infant's diet, or when advice is given it is frequently physiologically incorrect, owing to want of knowledge of the chemical composition of the food he recommends.

Perhaps the faulty literature partly accounts for this, for many writers and lecturers on infant feeding have given opinions, with but a slight knowledge of the physiological requirements of young children, or of the composition of the food they advise for them.

The natural food for infants is, of course, human milk, and it is a duty devolving on every mother to suckle her child, unless she is physically incapacitated. If the child has to be reared on a system of dry nursing, as is frequently the case, it is of paramount importance that its food shall have almost the same composition as its natural food. Up to a few years ago, it was a difficult matter to obtain trustworthy figures regarding the composition of human milk, as analysts came to widely different conclusions regarding the percentage of its different constituents, owing to their results being obtained from an insufficient number of samples, or else their methods of analysis differed. In 1885, however, Professor Leeds, a well-known American chemist, published his results of analysis of the milk from eighty-four women, which had been arrived at with the greatest care, after testing the various methods of analysis known, and his figures may be taken as accurately representing its composition, which is as follows:—

Proteids	2·00
Fat	4·13
Milk, sugar ...	6·94
Salts	0·201
Total Solid Matter	13·27
Solids not fat ...	9·14

These figures differ greatly from those usually given in books on dietetics, Payen's figures being usually taken which are

Proteids	3·35
Fat	3·34
Milk, sugar, and salts	3·77
Total solid matter ...	10·46
Solids not fat ...	7·12

A glance at the two sets of figures is quite sufficient to shew that a calculation of dietary from Payen's results must be incorrect, as the proteids are in much too large a quantity, while the milk sugar is only half the proper amount.

The four food groups are all represented in human milk, and almost in the same proportion as in the standard adult diet, except that the amount of fat is considerably larger. Of these, the most important is the nitrogenous, much more so to the infant than the adult, for in the former, in addition to food to replace the tissue waste which is continually going on, extra nitrogen is required for the formation and great growth of tissues, which takes place in early life, and on that account nitrogenous food, easily assimilated, should never be deficient in an infant dietary, though unfortunately, as I shall shortly shew you, such is often the case. Passing on now to the consideration of the various substitutes for the infant's natural food, these can be divided into three groups:—(1) The starchy foods, which include most of the prepared infants' foods. (2) The various kinds of condensed milks. (3) The fresh milk of other animals, of which for all practical purposes the milk of the cow is the only one available.

Concerning the first group, I shall say but little. Any farinaceous article is absolutely unsuitable for an infant's dietary during the first six months of life. Most of the so-called "Foods for Infants" contain starch often to a considerable extent, and should also be avoided, for not only is starch difficult of assimilation owing to the difficulty of conversion into grape sugar necessary before absorption can take place; but in the infant the fluids which bring about this conversion are either absent or else very scantily secreted, the salivary glands not secreting at all during the first few months, and the pancreatic diastatic ferment being only slightly produced. The result is that the infant's alimentary tract gets loaded with indigestible matter, its vitality becomes lowered, and the child too often falls an early prey to disease, or at the best drags on a miserable existence. Dr. Liebig has said, with much truth, that the usual farinaceous foods are the causes of most of the diseases, and half of the deaths of infants during the first six months. Starchy food should be absolutely tabooed, and afterwards should be only used in small quantity, and when boiled with milk.

I come now to the main object of my paper, the consideration of condensed milk, and its value as an infant food. There can be no doubt that milk in this form is used very largely indeed for children, judging by the infinite number of brands of the article in the market, and only a short time ago I saw stated that the profits of one company during a single year amounted to £60,000.

There are two varieties of this milk, the sweetened and the unsweetened, the former being much more used, as it is cheaper, more easily procured, and keeps much better when the tin is opened. These condensed milks are made by evaporating cow's milk in vacuo, and heating to 100° C. to destroy organisms, then on cooling to about 70°, the product is sealed up in air-tight cans. If the sweetened variety is required, from 30 to 50 per cent. cane sugar is added during concentration. From many of the milks a considerable quantity of fat is abstracted before boiling down. I have made several complete analyses of these milks, and their composition closely agrees with that given by other analysts and is as follows.

	A.	B.	C.	D.	E.
Water ...	23·14	25·63	27·89	27·33	27·23
Proteids . .	9·80	9·80	9·57	11·26	10·87
Fat ...	11·75	8·64	10·10	2·04	2·42
Lactose ..	12·10	—	11·50	56·87	15·20
Cane sugar	39·86	—	34·47		40·00
Ash ...	2·23	2·18	2·08	2·60	2·66
	98·88		100·61	100·10	98·38

The average composition of good cow's milk as determined recently by Dr. Vieth from many samples is as follows.

Total solid matter ...	12·42
Fat	3·52
Solids not fat	9·06
Proteids	3·30
Lactose	5·01
Ash	·77

By comparing it with the composition of the condensed milks the concentration of the latter will be seen to be about 3, calculated on the proteids, which is the most constant constituent of the milk. Thus, if we take "A," the richest milk in the above table, 1 part of it will make rather less than 3 parts of average cows' milk. "D" and "E" are made from skim milk, and contain less fat even in the condensed state than the poorest cows' milk. Compared with human milk an average whole condensed milk is nearly five times as rich, taking the nitrogenous matter as a standard. By diluting "A" with four times its quantity of water it has the following composition :—

Proteids	1·96
Fat	2·35
Lactose	2·43
Sucrose	7·97
Ash	0·45

So that while the proteids are the same as in human milk, the fat is deficient by almost half, and the lactose by two-thirds, while eight per cent. of a substance foreign to the infants' food is introduced. The difference is still greater with the skimmed condensed milks, as there is practically no fat, but relatively more cane sugar. It is thus easily seen that no dilution with water can make the composition of sweetened condensed milk agree with that of the child's natural food, though the above proportion of water is the best as producing the same amount of proteid matter. But what is the result if we add the water in the proportion recommended on the labels of the condensed milk cans, by which most people would be guided, or as advised in many books on infant feeding? The label on "C" for instance has the following, "For infants, dilute with 7 to 14 parts of water, according to the age and strength of the child." By adding 13 parts of water to "C" milk, we get a mixture having the following composition :—

Total solid matter ...	5·1
Proteids	0·67
Fat	0·73
Lactose	0·82
Cane sugar ...	2·80
Ash	0·15

If we consider that a child after the first few days takes about two pints of mother-milk daily, then the weight of each constituent required would be—

Proteids	...	0·80 oz.
Fat ...	...	1·60 „
Lactose	...	2·80 „
Ash ...	...	0·08 „
Total solids	...	5·28 oz.

Or a total of 5 oz. of food daily.

Two pints of milk ("C") made by diluting one part "C" with thirteen of water would contain—

Proteids ...	...	·27 oz.
Fat ...	...	·29 „
Lactose ...	...	·33 „
Cane sugar	...	1·10 „
Ash ...	...	·06 „
		2·05 oz.

Or a total of only 2 oz. of solid food, of which more than half consists of cane sugar; while the total amount of proteids, fat, and lactose in the mixture is less than a fifth of what is contained in the same quantity of human milk. The infant would have to take about eight pints of this wash daily to get a proper amount of nutriment—an impossible performance—so that the child would practically be placed on a starvation diet.

This is even more so the case in the skimmed varieties of condensed milks, where the fat—a very important constituent—is almost entirely abstracted, a fact which must often escape the notice of the purchaser, owing to its being indistinctly stated on the label or else hidden, as in some samples, the labels of which are almost unique, stating, as they do, that the milk—which in the condensed state contains less than half the amount of fat found in ordinary milk—can be used, when diluted, instead of cream. It is a pity that something has not been done to prevent manufacturers putting such statements on the tins; for not only are they fraudulent and misleading to the purchaser, but they are fraught with danger to the infant fed on food made according to such directions.

Unfortunately some of these inaccuracies are seen in print, and to a greater degree, for some persons recommend that the condensed milks shall be diluted with 15, 20, 30 parts of water, but I only hope that such advice is not often acted upon. Then again, it is generally advised that the milk shall be given very weak at first, gradually making it stronger as the child gets older. This is, however, opposed to the natural state of things, for as shewn by Professor Leeds in his paper on the subject, human milk contains more proteids, fat, and solid matter during the first fortnight of lactation than at any period up to the tenth month, so that on physiological grounds the infant's food should from the first approach the composition of its natural milk as closely as possible. This cannot be done without the infant taking a large amount of cane sugar in its food, and herein lies one of the greatest objections to sweetened condensed milks, for cane sugar as such cannot be absorbed into the system, but has to be previously converted into grape sugar and lactose, a process which in infants takes place but slowly. As a result the cane sugar is apt to undergo acetous fermentation in the alimentary canal, giving rise to irritant products and interfering with digestive processes, producing as a result various constitutional disturbances.

During some correspondence in the *British Medical Journal, (1884)*, it is stated that children fed on sweetened condensed milks suffer from dyspepsia and diarrhœa and are generally sickly, and they are, moreover, subject to skin eruptions. Dr. Saundby gives as his opinion that infants fed on it suffer from diarrhœa and get starved. Dr. Starr, of Philadelphia, a well known authority on infant dietetics, says that infants fed on condensed milk, though fat, are pale, lethargic, and flabby; although large, are far from strong, have little power to resist disease, cut their teeth late, and are very likely to drift into rickets before the end of the first year, and thinks it is never safe to bring up a child on this food. Drs. Eustace Smith and Angel Money share the same view, and other observers agree that the infants' vitality is much lowered even though they look strong; that they are invariably backward in walking owing to inferior muscular nutrition, and that the anterior fontanelles are very late in closing, owing to osseous malnutrition.

The British Medical Journal, in 1883, spoke very strongly against the ordinary sweetened condensed milks as increasing the danger of infantile diarrhœa, and speaking of the misdirections on the labels of the tins, says—"If a baby is deprived of three-eighths of its albuminoids, and three-quarters of its ratio of fat, while sugar is more than doubled, may we not say that a slow process of starvation takes place."

Finally, a Committee appointed by the French Society of Hygiene to analyse and report on condensed milks with reference to their value for infant feeding, reported as follows:—(1) That artificial milk prepared with two to four times its quantity of water is incontestably inferior to human milk; (2) The directions given on the labels are calculated to mislead the public; (3) Condensed milk diluted with from six to ten parts of water cannot be classed as an article of food; (4) Condensed milk containing sugar diluted with from two to three parts of water may form part of daily nourishment of children after the third or fourth month, but it is certainly imprudent to give it as the sole article of food. On the other hand, there are some medical men who say they have never seen any bad result arise from the use of these sweetened milks, but they are apparently a small minority, for during the various controversies on the subject which have appeared in the medical journals, very few writers speak favourably of them. I do not deny, however, that some children may be fed on these sweetened milks, and grow up strong and healthy, for some children will apparently thrive on anything; but speaking theoretically from a knowledge of their chemical composition, and its difference from that of human milk, and reviewing the evidence of medical men who have had practical experience of their use, I maintain that the sweet varieties of condensed milk should not, and cannot without grave risks in most instances, be used as a substitute for human milk; for if the milk is diluted so that the proteids are in the same proportion as in human milk, the excess of cane sugar causes gastric and intestinal derangements and serious results, while if the dilution is carried to a greater extent, the child may digest and assimilate the cane sugar and grow fat, and yet owing to the deficient supply of proteids (to say nothing of fat which is still more deficient) it is insufficiently nourished and unable to resist trivial diseases. In those cases however where the child is unable to take ordinary cow's milk, owing to a weak digestive power, which is unable to act on the casein coagula, the sweetened condensed milks considerably diluted may be of use temporarily, owing to the casein coagulating in a more finely divided and more flocculent form, and thus being easier of digestion, due probably to the double fact that the casein is present in relatively smaller quantity, and that the sugar mechanically prevents the coagula forming in large masses.

The unsweetened condensed milks, of which I must just say a few words, are very much superior to the sweetened varieties, and their advantage lies in the absence of cane sugar. Two brands of this milk are well known, that of the Aylesbury Dairy Co. and the "First Swiss Condensed Milk." They are constant in composition and rather more concentrated than the sweetened milks, and when diluted with about three times their weight of water, a milk is formed having almost the identical composition of good cow's milk.

The following is the composition, as ascertained by myself, of the "*First Swiss condensed milk:*"—

Total solid matter	37·55
Proteids	10·34
Fat	11·38
Lactose	13·17
Ash	2·30
Solids not fat ...	26·17

The disadvantages of the unsweetened compared with the sweetened varieties are that they are higher in price; though this is compensated by superior nutrient qualities, and they do not keep so well. If kept in a cool clean place, however, a tin will keep fresh fully three days; and a tin would be consumed by an infant in that time. In a tin opened and exposed to the air on a Friday, no bacteria were found till the following Monday. These milks, when diluted with from four to five times their quantity of water and four per cent. of milk sugar added, very much resemble human milk in composition, with the exception that the fat is somewhat deficient. Many medical men, while strongly condemning the sweetened varieties, speak highly of the unsweetened condensed milks, while I have not come across a single instance of their condemnation.

Even these milks should not in my opinion be solely used as an infant's food, for it has recently been shewn that infants fed exclusively on condensed milks are liable to a kind of scurvy, which is never the case with those fed on fresh cows' milk, and which disappears when fresh milk is substituted for the condensed variety. This is evidently due to some chemical change in the organic salts of the milk which takes place during condensation, and therefore when these unsweetened milks are used, fresh cows' milk should also form a certain proportion of the infant's diet. During travelling, and in districts where fresh milk cannot always readily be obtained, these milks, diluted to four or five times their bulk and sweetened with about four per cent. of milk sugar, form an excellent substitute for mothers' milk. But for their lack of antiscorbutic powers, these milks, thus prepared, would be better and safer than the cows' milk often sold in towns, as they are more uniform in composition, free from the danger arising from pollution in insanitary dairies or while stored in unhealthy places; while the heating of the milk previous to sealing up in air-tight tins, effectively destroys any germs which might be present in the milk owing to disease of the cow or other circumstances. As matters stand though, fresh milk must form the chief food of infants brought up by hand whether unsweetened condensed milk be used or not, and the milk of the cow is practically the only milk within the reach of the masses of the people, among whom the infantile mortality is greatest. It is of the greatest importance that the milk be pure; and this would more often be the case were the supervision of dairies and cowsheds more efficiently carried out and the adulteration Acts more rigidly enforced. It should be kept in a cool clean place, and may, with marked advantage be boiled, as a means of destroying germs and of more finely dividing the casein coagula, and when required for the infant, should be diluted in the proportion of one pint of milk to a half-pint or three-quarters of a pint of pure water, which, for greater safety, should also be boiled, more especially when the water supply is not above suspicion. A little milk sugar should also be added—about three teaspoonfuls to the half-pint of the mixture. This will make the composition of the milk almost similar to that of mothers' milk, if we except the deficiency of fat, as can be seen in this table, which is compiled from Dr. Vieth's figures representing the composition of cows' milk, and which have already been given.

Cows' milk (Vieth) diluted (1—1½):—

Proteids	2·20
Fat	2·35
Lactose	7·09
Ash	·51
Total solids ...	12·15

If the milk does not agree with the infant, the fresh milk may be diluted with lime water in the same proportion, which renders the milk more digestible, and will also keep it sweet for a longer time, or barley water which acts in the same way may be used. With most children this is not at all necessary, and the dilution with water and the addition of milk sugar is all that is required to provide a good substitute for human milk. The necessity of warming the milk before giving it to the child, should be pointed out to the mother, and it cannot be too strongly urged upon her, that whatever milk be used, the feeding bottle and tubes should be kept scrupulously clean, and for this purpose, be well washed each time after use. I have attempted to point out what I consider are some of the chief dangers to which infants, brought up on a dry system of nursing, are exposed, and I think it is patent to all, that if the ignorance of the working population can be enlightened, and I think the medical profession can greatly assist in this, not only will a large number of lives be annually saved, but much permanent ill health and subsequent misery will be avoided.

REPORTS OF CASES.

DISLOCATION OF BONES. DISEASES OF AND INJURIES TO JOINTS AND TENDONS.

BY JOHN T. HARTILL, L.R.C.P. LOND., M.R.C.S. ENG.

THE following are concise notes of the rarer cases of dislocation and the more important acute surgical diseases of and injuries to joints and tendons—except one of division of all the flexor tendons of the thumb and fingers, recently fully reported in the *British Medical Journal*—which have occurred in a Black Country practice during the past twenty-one years. I have not been able to keep *au fait* with the doings of the advance-guard of the profession in every respect, but I think the line of treatment has sometimes differed, with advantage to the patient, from that taught and practised in my student days. From practical experience I conclude—

1. That acute suppuration in the shoulder joint may be followed by good results if the pus be let out early.

2. That the elbow joint may be opened and some of the bones forming it completely shattered by injury, and yet the wound will heal and the joint in time get very large motion, provided care is taken there is no lodgment of putrid pus or blood.

3. That a free opening on the outer and inner side of the knee joint, with after-irrigation twice daily, was followed by the leg, if not the life, of the child being saved, and the result sufficiently satisfactory to encourage similar treatment in similar cases.

4. That the results of suppuration in the ankle joint are not satisfactory.

5. That clean-cut wounds into the elbow joint sometimes unite by first intention.

6. That both large and small tendons readily unite if brought and held together.

7. That the divided parts of fracture of the patella will unite firmly by fibrous tissue very late in life.

8. That dislocations may occur from muscular action only, without direct violence or any diseased condition of the joint.

Dislocation of Clavicle.—A miner, age 64, was struck on the shoulder, whilst at work, by a quantity of stuff which had fallen from the pit roof. I found the right clavicle dislocated, and its sternal end riding over the left sterno-clavicular joint. The bone was easily replaced, but with extreme difficulty kept in position. A piece of millboard was moulded to the shape of the surface fronting the joint after a figure of 8 bandage had been applied. This was well padded, and tightly secured by strips of adhesive plaister. The ligaments united, and the man went to work as a miner in four months, though there was considerable thickening around the joint.

Quadruple Dislocation.—A young manufacturer was oiling some machinery in motion when his shirt-sleeve got entangled. He caught hold of the spokes of the fly-wheel of the engine with his hands, was whirled round several times, and then he fell to the floor. On my arrival I found him pale and pulseless and on the border-land of death from syncope. The whole of his clothing was torn to shreds; there was dislocation at each shoulder-joint of the humerus into the axilla; and complete dislocation of the lower jaw on both sides. The condition of syncope rendered reduction of the dislocations easy. He was placed flat on his back, and restoratives were given. To my surprise, I met him next morning in the street driving a horse and spring trap himself. On calling at his house, he seemed to be not much the worse foi what had happened the day before.

Incised Wound into Elbow Joint.—During a terrific gale the wind got under a large piece of sheet iron and hurled it through the air. In its passage it struck the manager of an iron works on the elbow, and produced a clean-cut wound into the joint large enough to admit my finger. Bleeding was arrested, the wound carefully washed with tap water, sutures were applied, and an angular millboard splint was put on. The wound united by first intention, and the man resumed work in about a month.

Pus in Knee Joint after Scarlet Fever.—A child, age 2, the daughter of a bank manager, was suffering from scarlet fever. This set up inflammation of the right knee joint and the formation of pus therein. A free incision was made into the joint on one side, pains were taken to get as much of the pus out of the joint as possible as soon as the incision was made, the limb was fixed on a leather splint, and the joint was covered with cotton wool. The wool was renewed each day, no antiseptics were used, the wound healed up soon. The child is now about 10, the motion in the joint is perfect, and the only evidence of past mischief is the scar and some thickening of the femur on the opposite side to the scar.

Wound in Elbow Joint; division of triceps tendon.—A baker, age 17, was carrying a sack of grain down some steps. He slipped, and in falling, his elbow went through a pane of glass. The tendon of the triceps was completely severed just above the olecranon, and there was an opening into the joint large enough to admit a director. The divided edges of the tendon were brought together by several sutures of silk, and the skin and subcutaneous tissues were brought together by other sutures, and the arm was fixed on a straight splint. On the following day he was acutely feverish, and on dividing one of the outer stitches there was an escape of purulent fluid, apparently mingled with blood and synovia. Two days later, though much better, he was removed to a hospital, and the position of the arm was altered to an angle. The wound healed in a few days, and he speedily resumed work. It is not many weeks since the accident occurred, but the union of the tendon seems to be so perfect that no one could tell it had ever been divided.

Anchylosis at Shoulder Joint.—A master butcher, now 55 years old, when 16 suffered from suppuration in the shoulder joint. He was the son of a stout full-blooded man and a tall lean woman, who died from consumption at the age of 68, and whose mother died from hæmoptysis at the age of 75. My uncle let out the pus by an incision at the back of the humerus, just above the angle formed by the junction of the skin of the thorax with that of the arm. The discharge continued for several weeks, and the patient meanwhile walked about with his arm in a sling. After a time he began to use it, and the muscles of the scapula developed in size and strength, whilst the deltoid muscle wasted and there came increased mobility of the scapula. The head of the humerus cannot be felt; the glenoid cavity is easily felt; and there is extremely firm union between the humerus and the lower edge of the neck of the scapula. The union is so firm that for years he has been able to lift and carry huge quarters of beef; and it has further been recently tested, when, as the result of a collision, he was thrown with violence from his gig on to the shoulder, producing severe contusions and fracturing his frontal bone. Yet the adhesions do not appear to be damaged. It is probable the head of the bone disappeared during suppuration. He has, in the main, enjoyed a vigour of health far above the average, and seems likely to live to be an old man. His son is lame from chronic synovitis of the knee joint. The original disease was probably tubercular.

Unreduced Dislocation at Shoulder Joint.—A tailor, age 35, fell down some cellar steps. When first I saw him, six weeks after the accident, I found the head of the humerus out of the glenoid cavity, forward, and well up under the clavicle. Failing to reduce the dislocation with my heel in his axilla whilst under chloroform, I used pulleys, and with fair ease got the bone into its proper place. There was much pain about the joint for some time, but after the lapse of several months he was able to resume work; but he never regained sufficient mobility in the joint to permit him to comb his own hair with that arm.

Necrosis of the Head of the Femur.—Some years ago a young man walked into my surgery. He had suppurating sinuses near the hip joint. On passing in a probe I felt some dead bone. I took hold of it with a pair of forceps and pulled it out. It proved to be the entire head of the femur. He walked home. I had never seen him before and have not been able to trace him since, as I forgot to ask his name and he did not come again. There must have been new bone and some sort of a new joint in this case, or he could not have walked to and from my house. It is highly probable the sinuses closed after the dead bone was removed.

Amputation at Shoulder Joint.—A woman, whilst feeding a thrashing machine, fell in the machine, with the result that her arm was frightfully torn and fractured. I amputated the arm at the shoulder joint, secured the blood vessels, and brought the torn tissues together before she was taken off the machine. She died from shock next day.

Compound Fracture into Elbow Joint.—A middle-aged miner got his arm crushed between some "tubs" in a pit. The shaft of the humerus was broken, and there was a compound fracture of the ulna and humerus into the elbow joint. I was in favour of immediate amputation; but my brother thought there was a possibility of saving the arm, and the attempt was made. Several sinuses were slit up, crushed muscles were snipped off, and eighteen pieces of bone were removed. An angular splint covered with hospital sheeting was put on, and for a time carbolised water was arranged to drop on the wound constantly from a spigot fixed in a tin can above him. A few days later, phlegmonous erysipelas of the entire limb set in, and it became necessary to make several free incisions, and to sustain him with large quantities of brandy. It then transpired that a person had died from erysipelas about a month before on the bed on which he lay, and it seemed probable for three or four weeks death was to be his fate. In spite of all this the wounds healed, the bones united, new bone was formed, and in about ten or twelve months he went to work as a labourer, and was able to continue his work for several years, and may be at work now for all I know. I am told he got, in the course of time, considerable motion at the elbow joint.

Compound Fracture into Elbow Joint.—A miner, age 40, was struck on the arm by a quantity of rock which had fallen from the roof. There were two wounds, about three inches apart, which led down to fractures of the ulna and radius into the elbow joint. The wounds were on the posterior surface of the arm. A free incision was made between the two; pieces of bruised muscle were cut off; and twelve pieces of bone, partly from the radius but chiefly from the outer surface of the ulna, were taken out. The ulna was also fractured about three inches above the wrist joint. The arm was placed on an angular splint, and carbolised water was arranged to drip on the wound from a spigot for seven weeks. He was then permitted to get up, and other dressings were used. In twenty months after the accident happened he earned a little as an insurance agent, and was urged to use his arm as much as he could. Four months later a Post Office letter carrier got drunk and dropped the letters in the street. A gentleman picked them up and took them to the office. The postmaster immediately put an advertisement in the window for a new letter carrier. My patient saw it, and was taken on *pro tempore.* It was found he could not use his fingers fast enough to sort the letters with satisfaction, although his delivery of them was quick when he had started. It was just the work he wanted to make his arm useful, so, although he was to be discharged the service, I induced the postmaster and the other letter carriers to help him as much as possible and put up with his shortcomings for a time, in the hope that improvement might follow. The result has been that he has now had daily occupation for fifteen years, that he has gradually acquired increased mobility at the elbow joint until it has become little short of perfect, and that two of his sons have also for some years been in the Post Office service.

Inflammation of Knee Joint; amputation of thigh.—A young man, whilst drunk, attempted to get on an engine in motion. He slipped and fell. A horseshoe-shaped wound penetrated the patella bursa, and the soft tissues around were much bruised. The bones were not damaged, and no wound into the knee joint was detected. A few days later, after acute rigors, pus formed in and around the knee joint, and about the fourteenth day I advised amputation. This was not permitted until he was near to death, about a fortnight later. I amputated the limb below the middle of the thigh by the circular method. A portion of the tissues left sloughed, and he was kept from sinking by free doses of brandy. After the separation of the slough the surface healed, the greater portion of my incision having united by first intention. About six months later I met him riding on horseback and wearing a wooden leg.

Compound Fracture into Wrist Joint; amputation.—A youth got his hand between cog-wheels. The bones of the carpus were crushed. My brother amputated the hand above the wrist joint. I removed the dressings — lint and adhesive plaister—on the ninth day. Union was complete, and next day I saw him riding a horse.

Pyœmia after Miscarriage.—A woman about 40, after having had severe rigors, was found to have painful swellings in one shoulder joint and one ankle joint. She had recently miscarried, and an examination per vaginam shewed that the whole of the placenta had not passed. Free incisions were made into both joints, and pus escaped. The wound in the shoulder joint healed, and the arm had ample mobility. At a later date the foot was amputated by my brother by Chopart's method. She got well, and died many years later from cancer of the breast.

Inflammation of Knee Joint; irrigation of joint.—In September, 1888, a very healthy-looking handsome child, age 9, was seized with acute inflammation of one knee joint, speedily resulting in the formation of a large quantity of thick yellow pus, accompanied by symptoms dangerous to life. A boy had kicked her on the knee two months before and caused a bruise, but she had recovered from the bruise, and neither she nor her parents could with certainty say which knee was injured. About twelve days after the inflammation began, after giving chloroform, I made two fairly free incisions into the joint, one on the outer and the other on the inner side of the knee, and a large quantity of pus escaped. A back splint covered with hospital sheeting was then improvised, care being taken to fix the joint steady and in such a manner that the splint did not require to be removed except at intervals of several days. I then, with the aid of a probe, passed a piece of drainage-tube behind the patella right through the joint, and for about thirty-one days washed out the joint twice daily with carbolised water, cleaned the surface and splint, and encased the knee in boracic acid absorbent wool. Immediately the pus was let out she improved, and generally got a little worse just before the times arrived for each irrigation and was better afterwards. The strain on the resources of her friends becoming heavy, she was then placed in Wolverhampton Hospital under the care of my friend Mr. Vincent Jackson, and the treatment was continued for two or three weeks. She then got an attack of erysipelas of the leg and thigh, and for a time her life was in danger again. After a time the drainage-tube was cut in two, and each half was gradually shortened until the pus ceased to run and the wounds healed. The wounds having remained sound about five weeks, the limb was placed in a plaster of Paris bandage and she came home. The bandage was renewed about every two months for about a year and a half. On leaving the hospital an oval iron patten was made and screwed to the boot worn on the opposite foot, a sling was passed under the foot of the diseased leg and round her neck, and she was encouraged to walk with the aid of crutches, the patten serving the purpose of keeping the bad foot from catching the ground. In about four months the patten was dispensed with, and she began to bear a little weight on the diseased leg. Eight months later, after having previously gradually ascertained what she could do, she ceased to use crutches. At Easter, 1890, she returned to school, and at Whitsuntide the plaster bandage was abandoned. She now looks well, has no pain, the muscles of both limbs I am informed are about equally developed, can walk briskly with not much sign of lameness, can run, the leg is straight, but there is the faintest possible mobility in the joint. Will there be permanent anchylosis? Is it not possible that in five or six years there may yet be increased motion in the joint? Who can say?

Triple Amputation.—A youth was struck by the buffers of an engine. My brother amputated one foot, the other foot at the tarso-metatarsal articulation, and the thumb with its metacarpal bone. Two days later the youth was seized with the convulsions of tetanus, and for a few hours danger to life was imminent. Morphia was administered. He made a good recovery, and learned to walk and run so well with an artificial foot that only a smart observer could tell there was anything amiss with him.

Division of Extensor Tendon of Thumb.—The hand of a policeman was pushed through a pane of glass during a *mêlée* and sustained an incised wound over the first metacarpal bone. When the wound had healed, the last phalanx of the thumb was flexed, and he could not extend it—a very inconvenient thing for a policeman. I made an incision near the site of the wound after administering ether, and on finding the divided ends of the tendon, stitched them together loosely, and slightly overlapping, with silk, and then fixed the thumb on a tin splint. The tendons united, and perfect motion of the thumb was restored.

Fracture of Patella; dislocation at shoulder joint.—In November, 1889, a lady aged 78, who occasionally imbibed more spirit than was prudent, slipped and fell whilst walking across her sitting-room. Next morning I found she had dislocation of the left humerus into the axilla and a transverse fracture of the right patella, with a large effusion of blood round the patella, and a further effusion apparently of blood into the knee joint. The dislocation at the shoulder was easily reduced. A splint, covered with gutta percha tissue, was applied to the back of the knee and linseed-meal poultices were put over the knee for about five weeks, until all effusion had been absorbed She was then permitted to sit on a sofa with the leg up. In about three months she sat up daily in a chair, and was able to walk, with slight assistance, to any part of her bed-room and without crutches. At the end of June, 1890, she died from chronic Bright's disease and dropsy. A *post mortem* examination of the knee shewed a firm fibrous union between the upper and lower fragments of the patella, which had been divided transversely about its middle, the outer edge of the upper fragment having a sharp spicular margin, and there was a furrow between the united fragments about one-eighth of an inch wide. The synovial surface of the patella shewed that it also had been torn across, but the line of union was almost obliterated. On the inner side of the upper fragment a small piece of bone was detached vertically and firmly embedded in thickened tendon and ligament.

Dislocation at Hip Joint; fracture of pelvis.—I have only met with two cases of dislocation at the hip joint. Both were reduced by manipulation, one easily, the other with difficulty. Both were sustained whilst at work as miners, and accompanied by fracture of the pelvis and hæmorrhage from the kidneys, and both patients died in about forty-eight hours.

Dislocation at Shoulder Joint by muscular contraction.—Dislocation at the shoulder joint is in my experience very frequent, as I must have reduced some dozens of dislocations, the result of falling on the hand whilst the arm is extended or of direct violence on the shoulder. One case is worth recording as out of the common line. A strong healthy young man dislocated his humerus whilst lifting a bucket of water with the arm extended. The dislocation was reduced, and some time afterwards he became an epileptic. During an attack of epilepsy without violence the humerus was dislocated again; and henceforward it was frequently dislocated in the same way, sometimes, I am told, three or four times in a night. I reduced the dislocation myself some eight or ten times, until at last he found he could reduce it himself by taking hold of the horizontal plank of a sofa and then extending the arm whilst he set in action the muscles of the shoulder and shoulder blade.

Acute Rheumatism; suppuration in ankle joint; amputation.—A strong young iron-worker, who lived in a miserable home, was seized with rigors, dry tongue, sweating skin, sour perspiration, acute pain and swelling in all the principal and many of the smaller joints. In about four days it was clear there was pus in one ankle joint. The joint was opened and pus escaped. In a few days the pain and swelling in the other joints subsided, but his general condition indicated the probability of a fatal exhaustion unless the foot was amputated. He was removed to the hospital at Wolverhampton, his leg was amputated between the knee and ankle, he did well, and with the aid of an artificial leg resumed work.

PERISCOPE.

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KOCH'S REMEDY FOR TUBERCULOSIS.

We propose to publish a monthly abstract of the principal contributions to our knowledge of this method and its results, so as to keep our readers *au courant* with this very interesting subject.

During the month there has been a great abatement of the intense excitement among the public which followed the publication of Koch's paper, and perhaps there has been evident a good deal of reaction in the public mind, due to the disappointment incident to the non-fulfilment of the exaggerated pretensions put forward by the political press It is however fair to say that up to the present time no statement made by Koch himself has been disproved, though the actual value of the remedy remains still to be determined.

Koch's Method at the Hôpital Laënnec (Le Progrès Médical, Dec. 13th, 1890, No. 50).—Prof. Cornil, in a lecture delivered on Sunday, Dec. 7th, said that in every case of tuberculosis a general reaction had constantly followed injection. On the other hand, no reaction occurred in a patient with chronic ulcers of the leg following fracture. There had been great variations in the degree of local and general reaction in the same individual. In two cases of tubercular arthritis there was no reaction. This appears to contradict the former statement, but it was assumed that the lesion had reached the fibroid stage. The dose did not exceed three milligrammes except in two cases. *Albuminuria* was noted in two cases after injection. In another a swelling developed on the right ring finger, which previously presented no appearances of disease. In a child of 13, who had presented very slight signs of pulmonary tuberculosis, during the reaction there were bronchial breathing and moist râles. These signs disappeared next day, but returned after the next injection accompanied by violent spasmodic cough. After the third injection there were the same physical signs, but no cough. Prof. Cornil therefore regards the method as causing an exaggeration of the physical signs by which a latent tuberculosis may be made manifest. He thinks the remedy is contraindicated where there is disease of the kidneys.

Histological examination of fragments of lupus removed 24 to 36 hours after injection shewed intense inflammation of the tubercular regions with abundant infiltration of leucocytes in the tuberculous islands and their neighbourhood. He has not observed the molecular gangrene described by Koch, but he admits that he has not yet ventured to use the large doses employed in Berlin.

The Method of Koch at the Hôpital St. Louis (Le Progrès Médical, Dec. 13th, 1890, No. 50).—M. Vidal has treated about thirty cases of tubercular skin disease at the Hôpital St. Louis. While making ample reserve as to the ultimate effect, the following can be stated: An old lupus, ulcerated, swollen, rebellious to all treatment, rapidly suppurates, then the ulcerations improve and cicatrisation takes place. This rapid effect, this precision and certainty of touch, are most remarkable. The danger of collapse is pointed out. The diagnostic value of the method is stated to be not so great as Koch believes, as *cases of leprosy, cancer, syphilis, and even eczema gave a local reaction,* though not so marked as in tubercular affections.

M. Péan has had a death from collapse after injection. In a case of tubercular arthritis of the hip joint the œdema disappeared. and after a second injection there was diminution of the lesion. The appetite revived, and there was decided improvement. In a second case of the same kind, which was not healing but had sloughs, the sloughs began to heal, the pus became creamy, the ulcers looked healthy, the displacement disappeared, and there was evident improvement. In a patient with tubercular synovitis of the foot the wound, which had been stationary, healed with surprising rapidity. In a case of tuberculosis of the submaxillary glands the parts became mobile and better defined. A tuberculosis of the tarsus diminished in size, and a synovitis of the knee was distinctly ameliorated. Cold abscesses generally diminished in size, but not always. In a word, there was great improvement in the local lesions; suppuration diminished, fistulous tracks tended to close and ulcers to granulate; but of actual cure there was as yet no evidence.

Koch's Remedy in Tubercular Laryngitis.—In a leading article signed J. Baratoux *(Le Progrès Médical,* Dec. 13th, 1890, No. 50), the author says he has seen a large number of cases of laryngeal tuberculosis treated by Koch's method. Some hours after the injection the laryngeal mucous membrane, previously pale, becomes hyperæmic, and soon a uniform redness. invades all the parts affected by the disease, and encroaches upon the neighbouring healthy tissues. In the vocal cords this gradually increasing hyperæmia can be easily watched. Submucous hæmorrhages often occurred; and in one instance there was a rupture of vessels with a certain amount of hæmorrhage. With the redness there is well-marked swelling, especially around the ventricular bands, the epiglottis, and the posterior commissure. This swelling is accompanied by a white or yellowish white exudation, occupying the centre of the diseased tissue. After some days this exudation falls off, leaving funnel-shaped ulcerations whose centres correspond to the central portions of the tubercular patches. These ulcers granulate, but up to the time of writing had not been seen to heal. In certain cases small ulcers were observed on the edges of the vocal cords, which did not look like an improvement on the original state of things. ***Expectoration*** may be increased. ***Dysphagia*** has been relieved. He emphasises the danger ftom the swelling of the glottis. He thinks great apparent destruction of the parts is caused by the deep ulceration following the treatment. He refers to the possibility of acute miliary tuberculosis following injection, and professes to have seen a case.

Dr. Krause on Koch's Remedy in Laryngeal Tuberculosis (Berliner Klinische Wochenschrift, Dec. 3rd, 1890).—Krause states that there is undoubtedly a specific reaction in the larynx after injection, which is observed in the form of more or less diffuse redness and swelling, with diminution or less often increase of secretion. He has also noticed punctiform or diffuse hæmorrhages, changes of contour, superficial or deep exfoliation and necrosis, changes in the ulcers, chiefly favourable, as very frequently the greyish surface gives place to healthy granulations, finally frequently tending to cicatrisation and healing. The patients complain of dryness, tightness and constriction, and where the infiltration is extensive, of pricking pains in the larynx and neighbouring parts. He had only seen dangerous swelling and œdema of larynx in one case, and never any stenosis. No complete cure had taken place during the short time (2½ weeks) over which his observations had extended, but he is of opinion that the remedy will prove serviceable chiefly in early cases; he has seen great improvement in a very advanced case which had been treated by lactic acid and curetting, but had got worse. He believes that surgical means must assist the remedy. He utters a note of warning against large doses. He gives details of cases in which extensive necrosis occurred leaving deep ulcers, which however granulated rapidly.

Professor Bacelli on Koch's Remedy (The Lancet, Dec. 20th, 1890).—According to an Italian correspondent, Prof. Bacelli is employing Koch's remedy; but up to the time of writing, his experience was limited to a few injections. In one case of phthisis slight *hæmoptysis* followed the injection of four milligrammes.

Dr. Theodore Williams on Koch's Remedy (Brit. Med. Jour., Dec. 20th, 1890).—Dr. Williams, in a clinical lecture in which he described what he had seen in Berlin, stated that he had been present at two autopsies on patients who had died in the Charité Hospital under Koch's treatment. In one of the cases there was a large eruption of *recently formed tubercle*, and in another *more of necrosed masses* than are usually to be seen. He thought the improvement in the best cases, though "*striking, was not more than is met with in the wards of Brompton and other consumption hospitals under the ordinary conditions of diet and treatment.*"

Professor Leyden on Koch's Remedy (Berliner Klinische Wochenschrift, Dec. 8th, 1890).—Professor Leyden had only had a week's personal experience when this paper was read at the Medical Society of the Charité Hospital, but he had injected in all 46 patients. In the female wards he had injected 12 patients, the largest dose being eight milligrammes, as he had been somewhat cautious. Seven of these patients were *not tuberculous, of whom three reacted.* One of them was a case of albuminuria after pregnancy; the second, chlorosis, but with a family history of phthisis and some enlarged glands; and the third, intermittent hydronephrosis, supposed to be due to a calculus. The four who did not react were (1) abdominal cancer, (2) chlorosis with hysteria, (3) hysteria with bronchial catarrh, and (4) pulmonary emphysema. The five tuberculous patients all reacted typically. On the *male* side seven cases of phthisis were treated, of whom five reacted to doses of from 1—10 milligrammes; *one case with distinct phthisis and tubercle bacilli in sputum reacted to the first dose of 1 mg. to 100·5, but afterwards, with increased doses, scarcely at all.* A number of non-tubercular patients were injected without result. In No. 4 Block fourteen patients were injected, of whom seven were cases of phthisis. All reacted. A number of non-tubercular patients were injected, with negative results.

In three instances the reactionary *fever was prolonged.* In the case of nephritis of pregnancy alluded to above, it lasted two days; in a case of diabetes with tubercular phthisis, from two to three days; and in a case of incipient phthisis, to four days. A *marked reaction* followed the injection of five milligrammes in a case of Hodgkin's disease; and he refers to the same result in scarlatina and erysipelas cases which were *absolutely free from any suspicion of tubercle.*

In conclusion, he referred to the degenerative changes in the bacilli as not constant, and shewed a preparation in which they assumed a peculiar club-shaped appearance.

The Rationale of the Remedy.—Mr. Walter Sibley *(Brit. Med. Jour.*, Dec. 20th, 1890) writes to suggest that in many cases of tuberculosis there is "a tendency on the part of the individual to immunity from general tubercular affection by a process of attenuation from a local one." In proof of this he asserts that persons who have been the subject of caseating glands are less liable to suffer from phthisis than other members of the same family who have not had tuberculous glands. This very doubtful statement he supports by another to the effect that a patient who is the subject of one marked expression of scrofula very seldom develops another strumous disease at the same time; but the coincidence of lupus and phthisis, of fistula and phthisis, of phthisis and intestinal tuberculosis are too well known to make it easy to appreciate anything but the hardihood of this assertion. Following out this very shaky argument, he thinks that a substance is produced in all tubercular processes which tends to confer immunity on the organism, and that if this is artificially introduced in sufficient quantities it arrests and destroys the tubercular processes actually in existence in the tissues.

An Experimental Study of Preventive Inoculation in Tuberculosis.—E. L. Trudeau (*New York Medical Record*, November 22nd, 1890). — The authcr says that the idea of applying preventive inoculation to tuberculosis is not a new one. In 1883 Dr. Falk described to the Berlin Medical Society his attempts to produce a preventive substance by bringing the tubercular virus into contact with putrifying material. In 1886 Marfan drew attention to the protective influence of healed lupus and scrofulous glands. In 1887 H. Martin, and more recently Raymond and Arthaud, have made attempts in the same direction. The author's experiments may be divided into two series. In the first he employed a chemical substance derived from the bacillus but freed from living germs; in the second, a living but attenuated germ. In the first series he made use of—first, surface cultures of tubercle bacilli, which, through the influence of light and heat, were dead, and refused to grow in the usual culture media; second, liquid cultures of tubercle bacilli, grown for a month and then sterilised by heat; third, liquid cultures of tubercle bacilli freed from living germs by filtration through a porcelain filter. These substances were injected subcutaneously into fifteen rabbits, divided into three equal lots. These injections were repeated, in the case of the first preventive, three times; in the second, five times; in the third the number of times is not stated The rabbits bore these injections well, though the third caused marked febrile reaction, and none became tubercular. The whole of the rabbits were then inoculated with a suspension of tubercle bacilli in bouillon. The result was that all the rabbits became tubercular, and on *post mortem* examination the lesion was even farther advanced than in control animals not prepared by previous injection.

In the second series he employed an *accidentally* attenuated virus, the origin of which he cannot explain. This was used in liquid culture, and grown on glycerine-peptone-agar, but the results were the same; no protection was afforded by either method.

The interest of this paper is that it traverses ground which Koch must have worked on, and throws doubt upon the truth of certain speculations which have been made concerning the composition of the fluid employed by Koch.

Dr. Heron on Koch's Remedy in London.—The cases treated by Dr. Heron at the Victoria Park Hospital, in London, have given satisfactory reactions and shew marked improvement, especially Case 1, a man, aged 25, with phthisis, whose night sweats have disappeared and who feels much better, whilst the physical signs shew marked improvement in the condition of the lungs. The patient now gives no reaction to ·017 cc. of the fluid. Mr. Watson Cheyne has also obtained marked improvement in his lupus joint and gland cases. It is of great interest to learn that a woman under his care with leprosy has reacted in a manner quite similar to tubercular cases with a dose of ·01 cc., and that a second similar dose also gave reaction. The same experience has been obtained with leprosy by Kaposi; and Billroth is reported to have found that actinomycosis also gives a marked reaction.

Although in these cases there may of course have been some latent tubercular condition, it seems probable that we shall have to accept with some reserve the statement that the fluid is *absolutely* diagnostic of tubercle.

DISEASES OF THE NERVOUS SYSTEM.

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On the Simulation of Hysteria by organic disease of the nervous system.—By Dr. T. Buzzard (*Brain*, Part I., 1890).—This is a most interesting and instructive paper on a most difficult question. Dr. Buzzard lays stress on the fact that in his observation the knee jerk is not lost in hysteria. This is the generally accepted view, so that loss of the knee jerk is a pretty certain sign of a given case not being hysterical. The reviewer has however observed loss of the knee jerk in hysterical paraplegia, the reaction being restored by a faradaic shock and the paraplegia being cured in the same way. In this case the medical attendants had been induced to give a grave prognosis on account of the loss of the knee jerk. It is well therefore to remember that in rare cases the knee jerk may be lost in hysteria, but is usually restored by faradism. The knee jerks, as a rule, are however exaggerated in hysterical paraplegia, the plantar reflexes are often lost, and ankle clonus may be present.

Dr. Buzzard points out that incontinence of urine may occur in hysterical paraplegia, while retention is common. He describes an interesting form of paraplegia which has often been mistaken for hysteria. It is due to loss of power in the iliaco-psoas muscle, there being no power of flexing the thigh upon the pelvis, all the other movements being well performed. Atrophy of the iliaco-psoas muscles occurring in a young female, accompanied by hysterical symptoms, is very liable to be wrongly interpreted. The patient complains of difficulty in walking. Anæmia of the lumbar cord may explain some of the cases that recover; but most cases are incurable, and are probably cases of simple idiopathic muscular atrophy.

The important point to remember is that there may be isolated atrophy of the iliaco-psoas muscles, which produces a defect in walking, and which may be wrongly attributed to hysteria. Cases of Friedreich's ataxy are also liable to be mistaken for hysterical ataxy, especially in those rare instances in which only one member of a family is affected. The knee jerks are lost and the speech is slurred. Nystagmus is also common in Friedreich's disease. Dr. Buzzard mentions the peculiar club foot that occurs in this disease, and which may be the only complaint of the patient. In hysterical contracture adhesions may form in the joints, but there is no real muscular contracture. It is important to remember that the formation of adhesions in joints does not negative hysteria. In true hemiplegic contracture it is impossible by any amount of force to straighten the whole limb at one moment. If the fingers are straightened out, the wrist remains rigidly flexed; and if the metatarsus be brought into a line with the forearm by extending the wrist, the fingers will *ipso facto* become rigidly flexed In hysterical contracture, however, the fingers and wrist can be extended at the same moment, thus bringing the forearm, hand, and fingers into the same plane.

Dr. Buzzard is convinced that a very large number of cases of an early stage of disseminated sclerosis are diagnosed either as examples of hysteria or of voluntary simulation. There may be temporary weakness of one limb, transitory numbness in an extremity, temporary loss of sight in one eye, or a narrowly localised atrophy of a muscle group in the early stages of disseminated sclerosis. These symptoms occurring in an hysterical girl might easily be put down to hysteria, while really due to a very grave disease.

It is an important fact that in the course of disseminated sclerosis there are apt to be periods, varying in length, of almost or even complete subsidence of symptoms The apparent recovery of such symptoms is often wrongly taken to signify an hysterical origin. The discovery of optic atrophy is most important evidence of grave organic mischief, and in all cases the fundus oculi should be explored. There may be a history of loss of sight in one eye with gradual recovery, followed later on by loss of sight in the other eye with recovery. Such events are often wrongly attributed to hysteria. Of all organic diseases of the nervous system, disseminated sclerosis in its early stages is that which is most commonly mistaken for hysteria. The disease is especially common in young females, symptoms shewing themselves about the period of puberty. There is often a history of some moral shock immediately preceding the first symptoms Marked hysterical symptoms are often mixed up with those of this disease. A sudden loss of power in a limb of an apparently healthy girl, a localised numbness, complaint of loss of sight in one eye, are usually thought to be characteristic of hysteria; and the diagnosis of hysteria is thought to be confirmed by recovery from these symptoms. It is important to remember that such symptoms with recovery are common in an early stage of disseminated sclerosis. Hysterical paralyses are most often complete, and the limbs flaccid. In disseminated sclerosis the paralysis is usually moderate only, except in advanced stages, and there is rigidity. A shifting loss of power from one limb to the other is more characteristic of disseminated sclerosis than of hysteria.

Nystagmus is a very important symptom and, when present, negatives hysteria. Tremor is one of the most important diagnostic signs of disseminated sclerosis. Rhythmical tremor with voluntary movement does not occur in hysteria, though ataxy may. In disseminated sclerosis, as the patient brings the finger near an object the tremor is observed to cease or diminish greatly when the object is attained; in hysteria the patient touches an object without hesitation, but when the finger has rested upon the object for two or three seconds the arm may become affected with coarse tremor. Localised atrophy of muscles with loss of electrical reaction is known to occur sometimes in the course of disseminated sclerosis, and in a doubtful case its presence is of the highest value in determining the organic nature of the disease. The atrophy may clear off and be succeeded by a similar lesion elsewhere, resembling the shifting paresis and numbness.

Graves' Disease and Pregnancy.—Dr. Häberlin of Zurich, (*The Practitioner*, August, 1890), has published an interesting case in which the symptoms of Graves' Disease supervened on pregnancy. The symptoms disappeared after the expulsion of a dead fœtus, and the patient made a good recovery. Dr. Häberlin considers that Graves' Disease in this case set in as the result of conception, and was the direct cause of the death of the fœtus and premature labour.

Erythromĕlalgia.—Dr. Seymour, of Northampton, Mass. (*Vide Practitioner*), has reported a case of this peculiar vaso-motor-neurosis first described by Dr. Weir Mitchell, under the title of erythromelalgia. A woman who had been in ill health for some years, the result of severe mental work, and who had been accustomed to take chloral hydrate and sulphonal, suddenly experienced a sharp burning pain in the ball of the left foot whilst walking. The pain subsided when she assumed the recumbent posture, but returned upon her walking or standing. Pain was experienced if the foot was allowed to hang down, but she was perfectly at ease if she kept her foot in a horizontal position. The venous congestion of the skin was well marked. When the foot was at rest warm coverings were intolerable, and the application of cold brought relief. This case like others recorded proved intractable to medical treatment.

Ether hypodermically in Neuralgia.—Dr. Kums, of Antwerp, strongly recommends injections of sulphuric ether subcutaneously for rheumatic neuralgias. The injection is to be made as near as possible to the seat of pain, and is to be followed by massage of the part.

Respiratory paralysis after diphtheria.—Dr. Pasteur contributes an article to the *International Medical Journal*, September, 1890; on respiratory paralysis after diphtheria as a cause of pulmonary complications. He considers that too little attention has been paid to the effects of paralysis of the muscles of respiration on the movements of the chest, and to affections of the lungs and heart which may result therefrom. The classical signs of paralysis of the diaphragm, are reversal of the respiratory movements of the epigastrium and hypochondria, dyspnœa on effort, diminished force of cough, sneezing, spitting, etc., and loss of compressive action of the abdominal muscles, difficulty in defæcation, etc. The most noticeable physical signs are increased movements of the lower ribs, and recession of the epigastrium during inspiration. The exaggerated movements of the lower ribs are due to a compensating overaction of the scaleni and intercostal muscles, which is intensified by the diminution or removal of the steadying action of the diaphragm on the lower ribs. Its early appearance is to be regarded as a warning of approaching danger. Following paralysis of the diaphragm and inter-costal muscles, and in Dr. Pasteur's opinion as a direct consequence, œdema, collapse, and lobular pneumonia, with resulting cardiac trouble occur. Dr. Pasteur has satisfied himself of the relationship between paralysis of the respiratory muscles and loss of function in the subjacent lung. He finds that the loss of function is proportional to the degree of paralysis. The portion of the lung in relation with the paralysed muscles becomes œdematous, collapsed and inflamed. Dr. Pasteur advises feeding with a tube through the nose whenever the act of swallowing causes cough. And for the respiratory paralysis he advises the systematic employment of artificial respiration, the object being to prevent œdema and collapse of the lung. Artificial respiration should be employed three or four times in the twenty-four hours for a period of ten or fifteen minutes, as soon as paralysis of the diaphragm is detected.

The Treatment of Morphinism.—Dr. Lanphear, of Kansas city (*Journ. of Amer. Med. Assocn.*, 1890) describes his treatment of morphinism as follows :—The patient is put under the charge of a trustworthy nurse and is required to give up his instruments and morphine. No attempt is made at reducing the amount of morphine taken on the first day. On the second day but little reduction is made. On the third day the amount is reduced one half. On the fourth day there is a reduction of one half, and so on. Most cases require from seven to ten days for complete withdrawal. Nothing is needed to produce sleep the first two nights. At eight o'clock the third night 20 grains of sulphonal are given; the patient then has a bath, and at half-past nine the sulphonal is repeated and an hour later the morphine. The fourth night is a troublesome one, so at six o'clock he is given four grains of monobromide of camphor which is repeated at seven, eight, and nine o'clock. At ten o'clock 20 grains of sulphonal is given, which is repeated at eleven along with the last injection of morphine. This procedure is continued for a few nights, the dose of the monobromide of camphor is rapidly decreased and the sulphonal as soon as possible superseded by ammonium bromide which is also gradually reduced until nothing is taken—about the fourteenth day. It is very important to attend to the daily life of the invalid. Nutritious food, abundant exercise, proper sleep, freedom from worry, and if possible a pleasure trip, are essential.

Deltoid Paralysis from Plumbism.—Dr. Buzzard has reported the case of a house painter who, besides presenting the usual symptoms of plumbism, suffered from paralysis of the left deltoid muscle. Fibrillar contraction was noticed in the deltoid when he tried to use it, and the muscle wasted. Dr. Buzzard has also reported paralysis of the right third nerve in association with lead poisoning.

Borax in Epilepsy.—Dr. Stewart, of the Glamorgan County Asylum (*Brit. Med. Journ.*, p. 901, 1890) has reported cases illustrating the value of borax in epilepsy. He considers that this drug exercises a peculiar control over nocturnal seizures, and in cases where the fits are entirely of this kind the greatest good may be expected from its employment. Bromide of potassium exerts a more powerful influence over diurnal seizures, and in cases where the fits occur both by day and night the two remedies should be combined.

Reflex Chorea.—Many cases of reflex chorea have been recently reported. In all cases the genital organs should be examined. Boys should always be examined for preputial adhesions, and in girls adherent præputium clitoridis has proved to be a cause of chorea. Worms are commonly a cause.

The suspension treatment of certain diseases of the spinal cord.—Dr. Hamilton, of New York, in a paper on this subject (*New York Med. Record*, August 30, 1890), states that the burden of evidence goes to prove that suspension certainly effects decided improvement, and amelioration of all the symptoms of tabes, excepting the lost knee jerk and ocular degeneration. In no case should a patient with cardiac disease be subjected to the treatment; vertigo and paraplegia may result from the treatment unless great care is used. The good effects of the treatment result from a direct elongation of the spinal cord and a change in its vascularity. Dr. Hamilton employs a moveable inclined plane, the patient's feet being fastened to one end, so that extension is made when the head is lowered.

Recovery from Laudry's Paralysis.—A case of Laudry's disease in which recovery took place, has been recently reported by Oppenheim. The patient was a man aged 60, who was suddenly seized with weakness in the legs, which were soon quite paralysed. On the second day his arms were also affected. Within a few days difficulty of swallowing appeared, and speech became nasal. There was no pain, and little disturbance of sensation. The symptoms passed away in inverse order. The difficulty in speech and swallowing first disappeared, and then the arms recovered. Recovery was ultimately complete. The resemblance of this disease to multiple neuritis is so great as to suggest a close relation between the two.

PHYSIOLOGICAL & PATHOLOGICAL CHEMISTRY.

BY C. A. MAC MUNN, M.A., M.D., F.C.S.

(*Continued from page 351, vol. xxviii.*)

Pfeiffer's Test for Latent Gout.—Sir W. Roberts (*Lancet*, 1890, I., 9-10), points out that Pfeiffer's test for the discovery of "latent gout," and the relative condition known as "lithiasis," is unreliable. Pfeiffer introduced his test at the seventh congress of German physicians (Wiesbaden, 1888), which was as follows:—The acid urine of the 24 hours is divided into two parts, one part is passed through a filter on which pure uric acid has been placed, the other part is not thus treated. An equal volume of each portion is then acidified with hydrochloric acid, and set aside until the precipitated uric acid has fully separated. The two precipitates are then collected and weighed. In normal urine the weight is approximately the same in both cases. But in gout or "uro-lithiasis," the portion passed through the uric acid filter is found to have the greater portion of the uric acid removed from it, and but little or no formation of uric acid crystals occurs on subsequent treatment of the filtrate with hydrochloric acid. On repeating these experiments of Pfeiffer's, Sir W. Roberts found that the test was untrustworthy and misleading, as the amount of uric acid so deposited, in normal as well as in gouty urine, depends upon the interaction of a number of factors, *e.g.*, the degree of acidity of the urine, its richness in uric acid, the rate of filtration, and the amount of uric acid placed on the filter. The improved method now suggested consists in placing several portions of the urine in corked phials in a warm place (to prevent the urates being precipitated) and adding a few drops of chloroform to prevent putrefaction. Crystals of uric acid are then deposited sooner or later, provided the urine is acid, the *time* at which they appear giving an idea of the degree of precipitability of the urine, *i.e.*, of its tendency to the deposition of uric acid. If crystals appear in two or three hours, then an indication is afforded of a morbid imminence of gravel; if they appear after twelve or twenty-four hours, they do not indicate a morbid condition.

Estimation of Urea.—D. B. Dott (*Pharm. J. Trans.*, [3] xx., 793) recommends the use of hypochlorite of calcium instead of hypobromite of sodium for the estimation of urea, because of its keeping longer and because of its cheapness. One part of "bleaching powder" to three parts of water is the strength recommended. [In the United States the solution of chlorinated soda of the U.S.P. has long been used for this purpose.]

The Phenylhydrazine Test for Sugar in Urine.—J. A. Hirschl (*Zeit. Physiol. Chem.*, xiv., 377-389) has been experimenting upon this test for grape sugar, which was introduced by v. Jaksch (*Zeit. Klin. Med.*, xi., 20), but which Thierfelder and Geyer state is unreliable owing to glycuronic acid forming a compound with phenylhydrazine like that formed between the latter and grape sugar. Hirschl finds, however, that the compound with glycuronic acid, on heating to 100° C. on the water bath for a quarter of an hour, forms thicker needles than in the case of the phenylglucosazone, which, however, is not a sufficient test to distinguish them from those of the latter; but if the heating is continued longer (30 to 60 minutes), the precipitate obtained is amorphous, brownish yellow, and has a different melting point. Besides dextrose three other sugars have been detected in human urine:—1. Levulose (Zimmer, *Deutsch. med. Woch.*, ii., 329; Seegen, *Centr. med. Wiss.*, xxii., 753), which has been found only associated with dextrose, in diabetes. This cannot be distinguished from the latter by the above test, but only by the polarimeter. 2. Lactose (Hofmeister, *Zeit. Physiol. Chem.*, i, 101), which is found in the urine of nursing women. The compound of this with phenylhydrazine, *i.e.*, phenyllactosazone, occurs in needles, which are about ten times the width of those of phenylglucosazone, and are not arranged in the same manner. Their melting point is 200° C. 3. Maltose has been found in the urine by Le Nobel, and also forms a compound with phenylhydrazine, phenylmaltosazone, but this occurs in yellow tables melting at 80° C.

Hirschl concludes that this test is a perfectly trustworthy one, and if the urine gives typical needles of phenylglucosazone it certainly contains glucose. 0·03 per cent. of sugar in urine and 0·003 per cent. of sugar in water can be thus detected. The test-tube should however be left for one hour in the water bath. If a yellowish brown amorphous precipitate occurs, sugar is not present, but probably glycuronic acid. [For figures of the typical needles see von Jaksch, "Clinical Diagnosis," English translation by Cagney and Stirling, p. 227.]

Estimation of Uric Acid in Urine.—Bayrac (*Compt. rend.* cx., 352–353) advises 50 c.c. of urine to be evaporated on the water bath, the uric acid to be precipitated by adding 5 or 10 c.c. of hydrochloric acid of 20 per cent. strength, and the precipitate to be washed with alcohol to remove urea and creatinin. The uric acid is then dissolved in a small quantity of sodium hydroxide solution, and the solution heated to 90° or 100° C. with 15 c.c. of a concentrated solution of sodium hypobromite. [This method is not reliable, since adding hydrochloric acid does not cause the complete precipitation of uric acid in some cases.]

Fractional Heat-coagulation of Proteids.—J. B. Haycraft and C. W. Duggan (*Brit. Med. Journ.*, 1890, i., 167-169) shew that there are various circumstances which affect the temperature at which any proteid enters into coagulation by heat. Thus, the coagulation is affected by rapidity of heating, by dilution and the presence of certain neutral salts, of acids and of alkalies. These authors therefore think that one is not justified in concluding that more than one proteid is present in a solution from the fact that coagulation occurs at different temperatures. The heat when applied for a long time may alter the character of the proteid so that its coagulation temperature is raised, or the result may be the effect of dilution.

Presence of a Ferment in Chyle which destroys Sugar.—R. Lépine (*Compt. rend.*, cx., 742-745) found that the removal of the pancreas in a dog was followed by intense diabetes, the ratio of sugar to urea rising as high as 233 : 100. The injection of chyle into the jugular vein caused a marked reduction in the amount of sugar, the ratio of sugar to urea four hours afterwards being 24 : 100. After a time, however, the diabetes returned. Malt diastase similarly injected produced a similar but smaller diminution in the quantity of sugar. By adding chyle to a one per cent. solution of glucose, kept at 38° C., a decided decrease of the amount of glucose took place. Hence Lépine argues that the chyle contains a ferment which destroys glucose, and that the pancreas provides this ferment and thus has for one of its functions the prevention of an abnormal accumulation of glucose. Diabetes would then be a consequence of an insufficient supply of this ferment. Subsequently, Lépine and Barral (*Compt. rend.*, cx., 1314-1316) have made further experiments, shewing that not only chyle but blood also contains such a ferment. They term it the "glycolytic" ferment.

Ferment-action of Bacteria.—T. L. Brunton and A. MacFadyean (*Proc. Roy. Soc.*, xlvi., 542-553) have endeavoured to find out how certain microbes liquefy gelatin. They experimented with Koch's comma spirillum, Finkler's comma spirillum, a putrefactive micrococcus, scurf bacillus, and Klein's "Welford" bacillus. This liquefaction might be caused by the bacteria secreting some fluid which would dissolve the gelatin mechanically, or by their forming a specific enzyme which acts chemically upon it. A temperature of 100° C. destroyed both the bacteria and their liquefying power, but one of 50° destroyed neither. Exposure to temperatures between 60° and 70° killed the organisms, but in all cases, except that of the putrefactive micrococcus, it did *not* affect the liquefying power, although active bacteria were found to be absent. These facts seem to shew that the bacteria liquefy gelatin by means of a soluble enzyme, which the authors succeeded in isolating, and they proved its peptonising action apart from the bacteria that produce it. They found that the most active enzyme is formed in meat broth; that acidity hinders and alkalinity favours its action; that the bacteria which form a peptonising enzyme on proteid soil can also produce a diastatic enzyme on carbohydrate soil; that the diastatic ferment has no action on gelatin, and *vice versa;* that the bacteria adapt themselves to the soil on which they grow; and that they can digest such substances as dextrose and muscle, but they do not affect fat.

REPORTS OF SOCIETIES.

MIDLAND MEDICAL SOCIETY.

Wednesday, November 26th, M. A. MESSITER, M.R.C.S., President, in the chair.

Congenital Absence of Ribs on left side.—Mr. Messiter shewed a most remarkable example of this condition.

Fractured Olecranon; suture for fibrous union.—Mr. Barling shewed a case of a man aged 24, on whom he had operated, after fracture of the olecranon, nine months after the injury. The fragments were separated by an interval of 1½ in., and the muscles were extremely wasted, the measurement round the injured arm being 2½ in. less than on the opposite side. The surfaces of the fragments were freshened and brought together by one median silver wire suture, and the arm put up in the extended position. Union by first intention followed, and now, nine weeks after operation, the movements of the elbow joint are free in all directions, and the difference in circumference between the arms is only 1¼ in. The union between the fragments consisted only of some fibrous bands, and the upper fragment was so fixed by retraction of the triceps that it had been suspected that it was ankylosed to the lower end of the humerus. The suture remains *in situ*, and causes no inconvenience.

Hydatid Cyst of Kidney.—Mr. Christopher Martin shewed this specimen, removed from a lady, aged 46, by Mr. Lawson Tait. The cyst was first noticed two years ago, and the chief symptom was frequent micturition. There was no history of renal colic nor of hydatid vesicles passing in the urine. The cyst was as large as a man's head, filling up the entire right costo-ilial space. It was globular, tense, elastic, fluctuating, and painless. The abdomen was opened by a lateral vertical incision 3½ in. long and the cyst enucleated, but the kidney was so disorganised that it was also removed. The pedicle was secured with a wire serre-nœud and treated extraperitoneally. The patient made an uninterrupted recovery.

Placenta Prævia.—Mr. Christopher Martin also shewed a uterus at the seventh month of pregnancy containing a placenta prævia, removed *post mortem* by Dr. Malcolmson from a widow aged 38. No suspicion of pregnancy was entertained until the woman was found dead in bed lying in a pool of blood. The uterus was opened from above and the child extracted. The cervix was partially dilated, and the placenta detached for about an inch round the os internum.

Dr. Malins shewed the following specimens:—(1) Fibroid tumour of cervix, (2) channelled polypus of cervix, (3) fibroid of uterus, (4) membranous cast from vagina.

Gall Stones removed by Cholecystotomy.—Mr. F. Marsh exhibited nine gall stones, removed from a woman aged 53. They were irregular in shape and of an average diameter of ⅝ in. The patient had a good family history and had always been temperate. Her last pregnancy occurred eighteen years ago and terminated by a miscarriage. Since then she has had prolapse of the uterus, and has suffered from pains in the epigastric region associated with flatulence and vomiting. Her bowels have generally been constipated. She has never had jaundice, though her complexion has often been yellow. Eight months ago she noticed a lump in the abdomen, which was tender on pressure. Examination shewed a rounded prominence extending for a few inches below the right seventh costal cartilage, of the size and shape of a kidney. Microscopically the urine shewed a quantity of minute crystals of oxalate of lime with a few blood corpuscles. The diagnosis lay between a distended gall bladder, a movable kidney, and a renal tumour. An exploratory incision was made over the most prominent part of the tumour, which proved to be a distended gall bladder. It was drawn into the wound, and 4 oz. of sero-purulent fluid evacuated. The opening was then enlarged and the stones removed. A drainage tube was placed in the bladder, and the opening closed with a purse-string suture and fixed to the sides of the wound. Bile flowed through the tube for 48 hours, and was then replaced by a serous discharge. On the third day the tube was removed and the superficial edges of the wound brought together. The patient made a good recovery and is now quite well.

Exfoliation of Mucous Membrane of Gall Bladder from Suppurative Cholecystitis.—Mr. John W. Taylor shewed a specimen from a case of suppurative cholecystitis. Complete exfoliation of the mucous membrane of the gall bladder had taken place; and on opening the latter, which contained a pint of pus, a slough, consisting mainly of the mucous coat, was found lying free within the gall bladder, and was removed. Five or six gall stones, black in colour, were removed at the same time. As soon as the contents of the gall bladder had been discharged, the ducts became patent, bile flowing freely from the day of the operation. The patient made a good recovery.

Paper.—Mr. Jordan Lloyd read a paper on "Gonorrhœal Spermato-cystitis" (inflammation of the seminal vesicle).

REVIEWS.

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A MANUAL OF PUBLIC HEALTH.*

Of late years the increased importance of sanitation has brought into the market many manuals of hygiene and public health. These have all been based on much the same plan, and have indeed closely followed the methods of treatment pursued in the classical work of the late Dr. Parkes. It has been reserved to Mr. Wynter Blyth to break fresh ground and to produce a book which, while even more practical than many of its predecessors, is a veritable storehouse of the results of modern sanitary investigations.

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* A Manual of Public Health. By A. Wynter Blyth, M.R.C.S. Macmillan.

Mr. Blyth divides his book into twelve sections, which are as follow:—1, Statistics; 2, Air-ventilation and Warming; 3, Meteorology; 4, Water-supply; 5, Drains, Sewers, Sewage Disposal; 6, Nuisances; 7, Disinfection, Disinfectants; 8, Zymotic Diseases; 9, Isolation Hospitals; 10, Food, Diet; 11, The Duties of Sanitary Officers; 12, Inspection of Food. In Section 1 Mr. Blyth discusses the significance of vital statistics; explains the usual methods of calculation; and introduces his readers to the use of mechanical aids to calculation, viz., Fuller's spiral rule and the arithmometers of Edmondson and Thomas de Colmar. A full description is given of these ingenious instruments, the author expressing his preference for the straight form of De Colmar. In the section on air and ventilation Mr. Blyth introduces his own method for the accurate estimation of CO_2 in air, which appears to us both simple and accurate. Section 3, Meteorology, is a short one, yet appears to give all the information required under this head by the health officer.

In Section 4, Water-supply, Mr. Blyth gives full particulars of the general features of the water-supply of the Metropolis, and devotes a chapter to the scientific examination of water—chemical, microscopical, and biological. This chapter seems to us particularly well done, because the author has borne in mind the fact that what he has written is for the sanitary officer and not the trained analyst; and he has not cumbered the work with disquisitions on different processes, which require a special training to comprehend.

In the next section, on sewage, the various systems of sewage disposal are shortly but well treated, and the author sums up as follows:—"Finally, there can be little doubt that the ultimate solution of the sewage problem is the utilisation of the sewage on land, either carrying it direct to the land or, in certain cases, a combination of precipitation and irrigation by intermittent filtration." In this opinion he is doubtless speaking the views of all modern sanitarians.

Section 6, Nuisances, is one of the chief features in the book, for Mr. Blyth has brought together a mass of information, especially about "trade nuisances," which hitherto has had to be searched for in Government reports and papers which are not always accessible. He also gives in this section some of the most recent bye-laws, viz., those of the London County Council for the conduct of slaughterhouses and other offensive trades.

Section 7, Disinfectants, is treated in a thoroughly scientific spirit; and the first chapter gives experimental methods for testing the value of a disinfectant. The experiments of Parsons and Klein are fully given in reference to the disinfecting power of dry and moist heat, while modern investigations into the value of chemical agents are explained and criticised. Finally, instruction is given as to the best methods of disinfection both of sick rooms and drains and closets; and this chapter is to be commended to the attention of medical officers of health.

Section 8 is devoted to zymotic diseases, the first chapter being given up to the modern theory of micro-parasites. Chapters follow on the eruptive fevers, in which incubation, eruption, symptoms, and seasonal prevalence are very fully discussed; though it seems to us that the question of vaccination and small-pox is rather curtly treated in about two and a quarter pages. One of the most useful portions of this section is that devoted to the connection of scarlatina with disease in milch cows. The controversy between Drs. Klein and Crookshank as to the Hendon outbreak is well stated, and the author is inclined to range himself on the side of Dr. Klein. Pneumonia and tuberculosis are considered by Mr. Blyth to be proved definitely to be infectious, and are discussed accordingly; while he goes so far as to state that it will be the duty of the health officer to enforce isolation and cause disinfection to be performed after the termination of each case of pneumonia. This section concludes with a valuable resumé of Dr. Ballard's lengthy report on diarrhœa.

Section 9, Isolation Hospitals, is short and pithy. It contains the rules adopted by the Asylums Board for the regulation and management of the metropolitan hospitals.

Section 10, Food, discusses very shortly the principles of diet, and gives tables for calculating dietaries. The author, however, appears to consider this subject of less importance to health officers than some of the other writers on the subject; and in this we are inclined to agree with him.

Section 11 is devoted to the duties of health officers; and it may be noted that the author emphasises the use of photography as a convenient means of record, and gives some good advice to medical officers of health as to their treatment of authorities who shirk the efficient carrying out of necessary reforms.

Section 12, Inspection of Food, is full of valuable information; the characteristics of good and bad meat, etc., are carefully stated; and a chapter is devoted to a description of those animal diseases which render flesh more or less unfit for food. Speaking of tuberculosis, the author says: "The question as to whether an apparently local affection of the lung also affects the entire body has been now definitely answered in the affirmative, and the safest course is to consider tubercle always generalised, and to condemn the whole carcase for the slightest tuberculous taint." Whether such a wholesale condemnation of meat as this involves is, with our present knowledge, justified, must remain for the present an open question, many distinguished sanitarians arguing that, although more meat is now eaten than heretofore, the diminution of tuberculous disease of late years compels them to consider such a procedure unnecessary.

The book is well got up, embellished with excellent coloured lithographs and other drawings, and is undoubtedly one of which the author may be proud. It is written by a scientist for scientific men, and in the near future will be considered not only an indispensable aid to candidates for diplomas in State medicine, but a *vade mecum* for every medical officer of health.

DENTAL SURGERY.*

In this, the third edition of Mr. Sewill's book, he ably summarises the collective work of the leading physiologists and histologists who have contributed to dental literature during recent years. Tomes, Wedl, Huxley, Magitot, Waldeyer, by their investigations, have made most clear the anatomy and development of teeth; while the bacteriological researches of Koch, Underwood and others have demonstrated the true problem of dental caries. From the commencement one is delighted with the particularly clear and forcible manner in which the author marshalls his facts. There is nothing of an extraneous or superfluous character.

The chapter on caries is especially interesting; the theory of its etiology and pathology by bacterial agency is proved to demonstration.

There is much, of course, that is not new; but the great merit of the work is that it carries the student up to date in dental surgery and pathology. It is likewise illustrated by numerous micro-photographs, a great improvement upon the former diagrammatic method.

A chapter is appended upon the methods of preparing sections of carious teeth for microscopic examination, describing the most approved methods of cutting, staining, and mounting sections, which cannot fail to be of great service to the student.

The author evidently writes from wide personal experience and an intimate study of the works of leading pathologists. It is one of the best works on dental subjects we know.

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* Dental Surgery. By Henry Sewill, M.R.C.S., L.D.S. Eng. London: Baillière, Tindall, and Cox.

LETTSOMIAN LECTURES.*

THESE lectures deal with some of the more interesting and important points in the surgery of infancy and childhood, and, from Mr. Owen's position as surgeon for some years to the Great Ormond Street Hospital, it will be realised that they contain much valuable information. Amongst other matters, separate chapters are devoted to enlarged lymphatic glands, to congenital cystic hygroma, to dermoid cysts, to sterno-mastoid tumour, and to vesical calculus.

Speaking of the cystic hygromas, it is stated that they are as a rule best left alone, their tendency being to spontaneous cure, especially after some accidental inflammation has attacked them, whilst their indefinite boundaries and their intolerance of operative interference, often lead to much anxiety if an attempt is made to remove them; one case is, however, recorded in which death appears to have been due to suffocation, from the enormous growth of a hygroma.

The sterno-mastoid tumours of young infants are described as being due, with very few exceptions, to more or less complete rupture of the muscle caused during birth, and wry-neck is thus often produced. The lesion should be treated in its earliest days by massage, when any subsequent deformity may be prevented. Sub-cutaneous section of the sterno-mastoid for wry-necks is unhesitatingly condemned, division by the open method being recommended in its place. Speaking of vesical calculus, Mr. Owen condemns the "fashionable" craze for the high operation as a routine procedure; he recommends lithotrity in all cases, except where the stone is as large as a pigeon's egg, or where there are unusual difficulties in introducing the lithotrite. In the latter case, the stone being of moderate size, lateral lithotomy should be performed; for large stones the supra-pubic operation should be reserved.

These lectures are well worth perusal, as the clear and unhesitating expression of a well-informed surgeon.

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* The Lettsomian Lectures, delivered at the Medical Society of London, 1890, by Edmund Owen, M.B., F.R.C.S. London: Baillière, Tindall and Cox.

HYGIENE AND PUBLIC HEALTH.*

THE desirability of the appearance of a second edition of this extremely convenient and useful treatise is rendered evident by the exhaustion of the first edition within the short period of six months from the date of issue. This fact speaks for itself without there being any need for us to add words of recommendation to those we gave so recently.

There is little alteration in the present edition beyond "the correcting of the errors which are almost inseparable from a first edition," and the insertion of a few pages of new matter, consisting partly of minor additions that seemed to be desirable, such, for example, as the paragraph referring to the treatment of domestic dry refuse, and partly of additions rendered necessary by the extension of our knowledge, as in the case of the new-found dangers of poisoning by water-gas when used as a heating agent, or of the danger of vitiation of the air in mines by the use of roburite for blasting.

MAY

TREATMENT OF DISEASE IN CHILDREN.†

THIS is another instance of the success of Lewis's practical series of text-books, and the appearance of a second edition so soon after the first shews how successful Dr. Angel Money has been in adapting the scope of his work to the requirements of the busy practitioner and the much-engrossed student in these days of rapid progress in scientific knowledge.

The opportunity has been taken of making sundry improvements upon the first edition, and the slight increase in bulk that has been thus occasioned has been more than counterbalanced by the use of a smaller type for the less important paragraphs, and also by one or two omissions, among which may be noted the omission of the details of the operation of intubation of the larynx, which presumably has not as yet fulfilled the promise of usefulness that it gave when first brought prominently before the profession. Further, the index has been rendered much more complete than formerly, and three interesting illustrations have been added.

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* Hygiene and Public Health. By Louis C. Parkes, M.D. Second edition. London: H. K. Lewis, 136, Gower Street. 1890.

† Treatment of Disease in Children. By Angel Money, M.D., F.R.C.P. Lond. Second edition. London: H. K. Lewis, 136, Gower Street. 1890.

The book is a very useful one, and will doubtless continue to be much in demand.

ON BACTERIOLOGY AND ITS RESULTS.*

THANKS are due to Dr. Hime for his excellent rendering of this lecture. It consists in great part of a resumé of the science of bacteriology from its commencement some fifteen years ago; and one point strongly insisted on is the immutability of the various species of bacteria, although it is acknowledged that slight variations may occur, such as may justify the use of the term "varieties" without wishing to ignore the "species."

Referring to the often used and ungenerous reproach that so far bacteriology has resulted in little practical advantage, Koch points out some gain to practical medicine which is overlooked, and speaks hopefully of the future. The part of his lecture which will be read with the greatest interest is that in which he discusses the possibility of curing tuberculosis. He states briefly his experimental work on cultivations of tubercle bacillus with various re-agents, and the possibility, with very minute quantities of some of them, of absolutely preventing the growth of the organism; whilst the announcement that in guinea-pigs, the most susceptible of all animals to tubercle, immunity from tuberculosis may be obtained after they have been subjected to such substances, makes us look forward to Dr. Koch's future communications with the greatest possible interest.

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* On Bacteriology and its Results. A lecture delivered by Dr. R. Koch at the Berlin International Congress, 1890. Translated by T. Whiteside Hime, M.D. London: Baillière, Tindall, and Cox,

PRACTICAL CHEMISTRY FOR MEDICAL STUDENTS.*

This little book of fifty pages contains, in condensed form, the tests and chemical reactions of those simple substances with which a medical student is expected to be practically acquainted when presenting himself for examination before the Conjoint Board.

It is of a handy size, and may doubtless prove useful as a laboratory guide to the beginner; but it belongs to a class of books which, while seeming to render learning more easy, really do not do so, on account of their too great concentration and the absence of varied association whereby the facts can be fixed in the memory.

A much more lasting and satisfactory knowledge of the science would be obtained by the student who, day by day, prepared a short laboratory guide for himself by abstracting some larger and more detailed work on the subject instead of taking one ready printed for his use. If, however, such books are called for, the one before us is as little objectionable as may be under the circumstances; and as a pocket-book of reference for one who has already some knowledge of chemistry, it may prove very serviceable.

AN INTRODUCTION TO CHEMICAL SCIENCE.†

This book, which is designed to meet the want of a simple introduction to chemistry, does not call for much notice from us here. It is clearly and simply written, and a thoroughly practical character is maintained throughout, new subjects being introduced as far as possible by some illustrative experiment;

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* Practical Chemistry for Medical Students: Required at the First Examination of the Conjoint Examining Board in England. By Samuel Rideal, D Sc., etc. London: H. K. Lewis. 1890.

† An Introduction to Chemical Science. By R P. Williams, A.M. of Boston, U.S.A. Edited and revised by B. P. Lascelles, M.A., F.C.S. London: Gunn and Co. 1889.

and to facilitate reference, large type headings are freely used. But the sub-division into short paragraphs thus occasioned, together with the abundant interspersion of unanswered questions, does not tend to make it a pleasant book to read. There is little doubt, however, that it will be found a useful practical guide for those who do not desire to dip very deeply into this science.

A HANDBOOK OF THE THEORY AND PRACTICE OF MEDICINE.*

This latest edition of this well-known work calls for little comment and no criticism. Since the last edition (1888) short notices have been added on Weil's disease, Acromegaly, Xerostomia, Albumosuria, and Peptonuria — conditions not spoken of in 1888. There have also been a few re-arrangements of previous material, with expansion here and there. But otherwise the book stays much the same, still well deserving its popularity as a clear, concise, and comprehensive text-book.

Local Notes.

HOSPITAL REFORM ENQUIRY.

The committee appointed to enquire into the alleged abuse of the public hospital system sat at the Council House, under the presidency of his Honour Judge Chalmers, on Oct. 29th, to receive evidence from Mr. Lawson Tait, honorary surgeon to the Hospital for Women, and Mr. Elvis, secretary to the Farm Street Provident Dispensary.

Mr. Lawson Tait said that his experience at the Women's Hospital of the so-called registration-fee system was such as to condemn it utterly. The objection to it of more public importance was that, to a very large extent, it kept away the really deserving and suffering poor. It was a very easy way of obtaining money to maintain the hospital, and one in every respect radically bad. Concerning the system of governors' letters he had nothing to say but in condemnation. The system upon the staff of the hospital, upon its management, and upon its occupants had nothing but a pernicious influence. It prolonged the period of the hospital treatment, limited the power of the staff to select the cases for treatment solely upon the ground of their medical exigencies, and gave the governors the power of insisting upon the treatment of cases for social reasons which they ought not to possess. He knew of country hospitals in which my Lord Tom Noddy's gamekeeper was kept in the hospital for months merely to save his lordship the expense of medical treatment. No subscription for which a *quid pro quo* of that kind was given could be regarded as a real charity. As to the question of a preliminary enquiry as to the patients' means, he was disposed to believe that if the hospitals were open freely, without payment or qualification of any kind beyond the medical or surgical requirements of each case, there would be no need of any such enquiry. He did not believe that there existed anything like the amount of financial abuse that had been said to exist. In his hospital experience such cases would not amount to six a year, and probably they would be fewer than that. The only way to arrive at a standard of fitness for hospital relief was by placing the sole responsibility upon the medical staff. The system adopted at the Women's Hospital was in his opinion perfect, with the exception of the registration fee. The committee allowed the staff perfect liberty in the selection or rejection of all cases for out-patient relief, and placed upon them the entire responsibility of the admission of in-patients. If this were universally done, reform would at once be effected in many directions. In the first place, the medical and surgical requirements of the case would be its pressing and only demand for admission. The trivial cases—insufficient cases as he would call them—now admitted for in-patient treatment by governors' notes would never be seen in the wards, and the trumpery cases which crowded the out-patient department would be greatly diminished. Further, it would be alike the interest and the duty of the hospital officer to reject all cases which seemed to him unsuitable. The question of special hospitals *versus* special departments of general hospitals was one which had been debated for the last forty years, and the difference of opinion was still irreconcilable. He thought he could, without fear of contradiction, say that no substantial contribution had ever been made to abdominal surgery except at the hands of a man who had been engaged at a special hospital; and he thought the same thing might be said, for the most part, with regard to other special branches. With regard to medical education, the special departments of general hospitals were not attended by a large proportion of the students; and in the cases of those special courses of lectures which were not required by examiners, it was found they were practically attended by no students at all.

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* A Handbook of the Theory and Practice of Medicine. By Frederick T. Roberts, M.D., B.Sc., F.R.C.P. Eighth edition. 1890.

Mr. PRIESTLEY SMITH: That is absolutely contrary to my experience.

Mr. TAIT replied that he was speaking as a member of the staff of Queen's College. He considered that for purposes of special medical and surgical education the special hospitals were better than special wards of general hospitals, because they afforded a perfect education for the limited number that desired to practise as specialists. He considered that skin and lock hospitals in particular should be special hospitals. It was customary to associate the skin and lock departments, but the former, as far as non-contagious cases were concerned, might be considered as part of the general hospital treatment. The lock department, however, was desirable with a view to the early treatment and the ultimate stamping out, it was to be hoped, of such diseases. He should be disposed to place all hospitals, so far as the in-patient departments were concerned, in such a position, defined by statute, that, save in cases of urgency and accident, it should be practically impossible to obtain admission to a hospital save after the applicants had been filtered through a dispensary, or, what was the same thing, an out-patient department. He should not be disposed to affiliate particular dispensaries to particular hospitals, but should make the entrance to the in-patient departments of all the hospitals dependent upon the selection by members of the staff of some kind of out-patient department or system of home attendance. As to trivial cases, he was satisfied that at the Women's Hospital a considerable portion of the women came for no real intention of receiving medical relief, but for the purpose of sitting in a room, comfortably warmed, in which they might have an afternoon's gossip with old friends and make new ones. When he saw them they described themselves as suffering from all sorts of impossible symptoms.

The CHAIRMAN: And they have no reason for coming?

Mr. LAWSON TAIT: No; only just the fun of the thing. The same kind of abuse prevailed at other hospitals. These cases could be weeded out if the medical officers possessed more moral courage; but no hospital committee liked to shew a diminished number of patients in the annual returns, and no medical officer liked to see his waiting-room half empty while his colleague's was filled. The Workhouse Infirmary, he considered, ought to be made the backbone of the Birmingham medical school. Some time ago he made a proposition to the Guardians that the consulting staff should be increased with that view, but the Guardians held that it was not within their province. He, however, considered that it was. They had that magnificent institution, supported out of the public money, and it ought to be used for the public benefit. In the first place, the material at the Workhouse Infirmary was so vast that no kind of hardship could be inflicted upon the patients by their being made the subjects of clinical instruction. Secondly, the cases sent there were those which constituted nineteen-twentieths of the daily business of an ordinary medical practitioner. That was not the case in large general or special hospitals. Under the present system the student, when he left the examining boards, had to begin to learn the real business of his life, whereas, if his training had taken place more in the Workhouse Infirmary and less in the General Hospital, he would be a far more accomplished and useful practitioner.

In reply to the Chairman, Mr. TAIT said he did not think it possible that there ever would be a body sufficiently representative of medical opinion to lay down as matter of professional etiquette the circumstances under which gratuitous medical aid should be given or refused. The question had never been raised in the profession in that way.

You do not think it possible to have anything like the Incorporated Law Society?

There is no unpaid legal assistance.

Then anything that is done by the medical profession to check hospital abuse must be done individually and not under compulsion?

It should be done, in the way I have explained, by giving the medical staff the selection of cases.

In reply to further questions, Mr. TAIT said that the presence of students in a hospital was beneficial to the patients. Students were the keenest critics one could have, and an operation performed in their presence was sure to be performed with the utmost of the officer's care and skill. The presence of students in a ward was an absolute safeguard against abuses arising from spite or neglect on the part of nurses and other causes. In fact, the students might be considered representatives of the public, and their presence would prevent the hushing up of any abuse. The students were just as humane and as human as other people, and would not stand an officer who treated patients cruelly or unskilfully. It would not do for the in-patient staff of a hospital to be enlarged, because the experience value of the hospital practice would be diminished. In his practice he could, by working hard, attend to twenty-five beds The number ought not to be increased; and if it were reduced to, say, ten or twelve, it would not answer his purpose to attend. In the out-patient or dispensary department of hospitals, however, the staff might be increased with advantage.

With regard to the system of provident dispensaries, Mr. Lawson Tait read a history of the movement started in Birmingham in 1877 under the mayoralty of Alderman Baker. At a meeting in the Town Hall, in July of that year, it was decided to endeavour to secure the co-operation of the medical charities and friendly societies of the district in inaugurating a system similar to that which had been adopted in Manchester, and the city and the suburbs were mapped out into eight districts, each to have a dispensary, managed by a local committee, subject to regulations to be laid down by a general committee. Under the will of the late Mr. Sands Cox, sites had been provided for three of the districts—Hockley, Balsall Heath and Saltley, Duddeston and Nechells. The Saltley site had been sold owing to its proximity to a branch of the General Dispensary, and the money was added to the capital pending the submission to the Charity Commissioners of a scheme for its application. The other two had had Provident Dispensaries built upon them. The committee appointed at the Town Hall meeting, before commencing operations, communicated with the friendly societies, the medical charities, and the Birmingham and Midland Counties Branch of the British Medical Association. and the Midland Medical Society. Out of about a hundred friendly societies only two or three replied, and these replies, though favourable, were not authoritative. From the General Hospital the following reply was received:—"That as the laws (for the proposed provident dispensary) have no reference to this hospital, the committee do not feel called upon to express any opinion upon them." The committee of the General Dispensary declined to express any opinion; those of the Women's, the Homœopathic, and the Dental hospitals passed resolutions approving of the scheme, and promising co-operation. The committee of the Queen's Hospital declared that the question deserved its most careful consideration, and asked that each of its members should be supplied with copies of the scheme; but no further communication had been received.

The CHAIRMAN: Perhaps they are still considering it.

The Charity Organisation Society affirmed the scheme, and the medical societies of the town and district appointed special committees to confer with the Provident Dispensary Committee. At the first meeting of the conference the medical representatives desired that a preliminary resolution be passed that the medical charities ought to be asked to alter their rule as to the registration of out-patients simultaneously with the establishment of provident dispensaries. This was ruled out of order; but a minute was made of the expression of opinion "that the medical charities must co-operate in effecting reform in hospital administration in order that provident dispensaries may effect the purpose for which they are proposed" Ultimately the medical societies declined to take any further part in the consideration of the scheme until the governing body of each of the medical charities should have signified its willingness to co-operate in an endeavour to check abuse while securing relief for all really deserving persons.

Mr. LAWSON TAIT then went on to describe how the committee proceeded with its work, and said the Hockley Provident Dispensary was built in Farm Street by the Sands Cox trustees, and opened in 1880, and had been in active and successful operation ever since. Shortly afterwards a second dispensary was opened, in Sherbourne Road, Balsall Heath. He believed that if the original scheme had been carried out, a complete reform would long since have been effected in the out-patient department of the General Hospital, and to a very large extent of all the hospitals, with perhaps the exception of the Eye Hospital and the Women's Hospital. The Children's Hospital Out-patient Department could have been reduced to one-fourth of its present dimensions. Instead of that, the town had been occupied by two sets of institutions, which had done the medical profession a great deal of harm, although one of them had done the public a great deal of good—he meant the General Dispensary branches, by which a vast improvement had been effected in the home attendance of the sick poor. On that system ought to be grafted that of the provident dispensary. The two principal lines to be observed in the working of provident dispensaries were payment during health to provide for medical attendance during sickness, and as wide a choice by the patient of medical attendants as could possibly be given. Another result of the defeat of the experimental efforts of the Provident Dispensary Committee had been to flood the town with a series of bogus provident dispensaries, which had done the medical profession greater harm financially and socially than anything else that had ever happened. These dispensaries were run by a syndicate of financiers in London, who made a very handsome profit out of them even at the low fees charged. This they did by supplying drugs of the most inferior quality, and employing medical labour of the lowest kind at starvation prices. It was still possible, he thought, to bring about the desired reform of the hospital system; but if the medical charities still retained their attitude of indisposition, nothing could possibly be done. The provident dispensary system was the only remedy for hospital abuse.

Mr. Lawson Tait then gave details as to the working of the two Provident Dispensaries; and, in reply to questions from the committee, stated that the system of choice of medical attendants had an excellent effect upon the medical officers, and made the institutions popular with the patients. He considered that the work paid medical men better than club practice did. In Northampton and Coventry the recognised heads of the profession, men with large consulting practice, were officers of provident dispensaries. One of them made £800 a year out of the dispensary. He knew for a fact that large sums were remitted to London from Birmingham every Saturday to the syndicate that ran the sixpenny doctors' shops. At the Sherbourne Road Provident Dispensary they had 1,200 members, receiving on an average about twenty-two visits each a year. They would have three or four thousand members if the building were in Longmore Street. He did not see why an artisan should feel that he would be degraded by joining an endowed, but now self-supporting, dispensary any more than he would be by accepting the benefits of Mason College or the Midland Institute. It would be different if subscriptions had to be canvassed for to enable him to receive benefits greater than those he paid for. As to fitness for membership, he was afraid it was impossible to get a satisfactory test. He thought there should be a sliding-scale of payments, so graduated that those who ought to go to doctors in the ordinary way would find it to their advantage to do so. A wages scale would not work fairly, and the only standard he could think of was that of the rent a man paid.

Mr. ELVIS, Secretary of the Hockley Provident Dispensary, gave an interesting account of the working of that institution. He said that it was found the system of choice of medical attendants by the patients did not answer, the popularity of a medical man depending largely upon the situation of his surgery, patients preferring to exercise their privilege of seeing him there. The result was that the rest of the staff became indifferent; and some of them actually started or joined dispensaries in opposition to the Provident while themselves remaining officers of it. Consequently, the committee decided to have a medical officer of its own, devoting himself entirely to the dispensary, and residing and seeing patients at the dispensary building. This system had been in operation for twelve months, and had proved a great success.

The committee appointed to enquire into alleged abuses of the hospital system in Birmingham held another sitting on December 10th, for the purpose of hearing further evidence on the working of provident dispensaries. His Honour Judge CHALMERS presided; and there were also present the Rev. J. C. Blissard, Alderman Lloyd, Dr. Rickards, Mr. Priestley Smith, and Councillor Ball.

The Rev. JOSEPH WOOD, who formerly was a member of the committee of the Leicester Provident Dispensary and of the

Leicester Infirmary Board, said the Provident Dispensary had 35,000 members out of a population of 150,000. There was in Leicester one hospital, with an income of £12,000 and with 12,000 out-patients and 230 beds. The out-patients therefore numbered 1 in 12 of the population; and he attributed the smallness of this proportion entirely to the existence of provident dispensaries. The payment was 1d. for each member of a family over fourteen years of age, and 1d. to include all the children under that age. In midwifery cases an extra charge of 15s. per case was made for the services of the doctor and the midwife. The subscriptions of members amounted to over £5,500 a year, the payments for midwifery cases to £550, the voluntary subscriptions to £400, and the total income to £6,642 per annum. This income provided for the working of a central and seven branch dispensaries, and the payment of twenty medical men. The doctors were appointed to the various dispensaries; but a member had the privilege of choosing any doctor on the list. The medical men received on an average £150 a year each, but the amount varied very considerably, according to the length of service and the popularity of the district officer. In some cases it was as much as £500 a year, and in others it was only £30 or £40. The management expenses of course were considerable. The fees were collected by collectors calling once a month, and that involved a considerable expense. The cost of drugs was £1,137 per annum. The rule as to admission was that the members should be servants, and working people and their wives and children, who in the opinion of the board were unable to pay for medical attendance in the ordinary way. The board had also power to admit friendly societies to the benefits of the institution. The members had no voice in the government of the dispensary, which was carried on by those who subscribed the £400 a year. He did not approve of this system; but in Leicester the Dispensary was commenced as a benevolent institution, and the constitution had not been altered. An attempt had been made to get it altered, but it was thought desirable to retain the voluntary subscriptions in order that the management might be in the hands of experienced persons. In a general way there was no difficulty with regard to deciding the eligibility of persons for membership. In 1878 the medical men complained of the Dispensary being abused, and they were asked to supply a list of cases for investigation. Out of a membership of 23,000 only 20 cases were reported, and some three or four of the persons, on investigation, were allowed to remain in the institution. This year another enquiry was asked for, but out of 35,000 members only fifteen were reported by the medical staff. He thought that the system might very profitably be applied to Birmingham if they had the courage to apply it in the right way. They should recognise the feeling of a great many of the working men that their contribution to the Hospital Saturday Fund gave them a claim to medical assistance. That feeling was widely spread, and was natural, and to a large extent justifiable. They should at once divert the Hospital Saturday Fund to a large provident dispensary, which should undertake the work now done by the out-patient departments of the hospitals. Putting the Hospital Saturday Fund at £10,000 a year, that would pay thirty medical men and the cost of working the central and branch dispensaries. He had drawn out a prospective balance-sheet of such an institution. Fifty thousand members at 1d. per week, with entrance fee or management fee, would bring in £10,000. To this he would add midwifery fees, £700; subscriptions, £1,000; sundries, £100; making a total of £11,800. The expenses he would put as follows:—Thirty medical men at an average of £150; drugs and surgical appliances, £750; rent of buildings, £4,350; other expenses, £500; total, £8,850; leaving a balance of £2,950. He believed that the existence of such an institution in Birmingham would diminish the number of out-patients at the hospitals at least 50 per cent. The only out-patient cases he would leave to the hospitals were cases of accident or emergency and those special cases which were sent from the dispensary. Except in such cases the people who did not belong to the dispensary should go to the parish. The Queen's Hospital had 31,800 out-patients, and the cost was estimated in the report at 2s. 6d. each. He was told by the secretary, however, that the real cost was 1s. 6d. Fifteen thousand cases at 1s. 6d. would mean £1,125 per annum.

Alderman LLOYD pointed out that the establishment charges would not diminish in proportion to the reduction in the number of cases.

(To be continued.)

New Books, etc., Received.

Worte der Nothwehr gegen seine Excellenz den Kaiserl. RUSSISCHEN GEHEIMEN RATH, Professor, Dr. Med., Herrn WILHELM DUSZAN LAMBL von D., und FRANZ LUDWIG NEUGEBAUER (Sohn). Leipzig: K. F. Koehler.

Foods and Dietaries: a Manual of Clinical Dietetics. By R. W. BURNET, M.D. London: Charles Griffin and Co. 1890.

Researches on Micro-organisms. By A. B. GRIFFITHS, Ph.D., F.R.S.E., F.C.S. London: Baillière, Tindall and Cox. 1891.

Aids to Sanitary Science. By FRANCIS J. ALLAN, M.D. Edin. London: Baillière, Tindall and Cox.

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THE

BIRMINGHAM MEDICAL REVIEW.

FEBRUARY, 1891.

ORIGINAL COMMUNICATIONS.

ON HEADACHES AND OTHER RESULTS OF OCULAR STRAIN.

THE MIDDLEMORE LECTURE, 1890.

BY HENRY EALES,
SURGEON TO THE BIRMINGHAM AND MIDLAND EYE HOSPITAL.

Gentlemen,

I cannot commence this course of lectures without a few words in expression of the high appreciation I am sure all members of our profession entertain of Mr. Middlemore's enlightenment and generosity in founding and endowing these annual lectures.

Mr. Middlemore's action in this matter is only another of the many evidences of his persistent desire throughout a long life to diffuse amongst his medical brethren the knowledge of that speciality which he pursued for so many years with the highest distinction to himself, and advantage to the community.

My colleague, Mr. Lloyd-Owen, last year paid a high but worthy tribute to Mr. Middlemore's singlemindedness and high purpose in establishing this Lectureship, and many other acts of a similar nature, which I most cordially endorse, and like him I wish to congratulate Mr. Middlemore in having lived to see the accomplishment of his purpose and being possessed at the present time, in his 87th year, of health of body and mind requisite to take pleasure therein; and with my colleague I would express a hope that he may yet be spared for some years to see the fruit of his good works. In his hopes and aspirations Mr. Middlemore, like many original thinkers before him, is probably only in advance of his time, for it seems probable that in the near future the great medical corporations of this country will make it incumbent on all who wish to enter our profession to attend, at least during a small portion of their medical curriculum, on the ophthalmic practice of such institutions as this, as indeed has already been done by the Irish corporations; then Mr. Middlemore will occupy the proud distinction of having been a pioneer in the path of progress.

My feelings in undertaking the duties of Lecturer for this year are those of mingled pleasure and fear. Pleasure in filling a position which I trust may be the beginning of a more complete development of this Hospital, rich in clinical material, so long divorced from all participation in the great scheme of medical education in Birmingham, as a teaching centre; fear that my capabilities, not wont to be directed to teaching, must fall far short of what is desirable in one filling such a position.

In taking the subject of "Headaches from ocular strain and distress" as that of these Lectures, I was actuated by a desire to lay before you our experience as Ophthalmologists as to how the eyes may be a cause of one of the most common and distressing of the ailments which more or less incapacitate the members of our civilised, over-educated and overworked community from following their daily avocations, and for which the members of our profession are constantly consulted. For though the conditions which act as the cause belong to the most special, if I may say so, of our special branch of medicine, the results are so common that it is desirable that all should have an acquaintance with the causes that underlie them.

I felt the more disposed to take this subject for my discourse, because while it covers a very large part of the field of our special labours it was left entirely untouched by my colleague in his lectures of last year.

This subject is concerned only with functional distress and disturbance in the eyes, not with their structural diseases; and

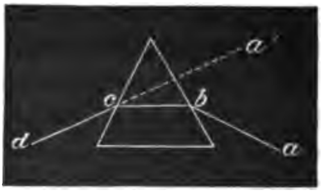
I propose to deal with it under two heads. 1. To-day I shall deal with functional strain and distress in eyes whose focus is normal. 2. In my next lecture I shall treat of certain defects in the focal conditions of the eye, which of themselves lead to strain and distress of its functions. I propose only to touch very lightly on the optical and other conditions which underlie these troubles, and only just sufficiently to explain the phenomena which these cases present clinically, as I feel it would be impossible for me within the scope of these lectures to deal satisfactorily or in any profundity with the question of optics as applied to the eye and the defects in the normal optical condition of the human eye which are so commonly present, or with our various methods of detecting and correcting these latter. The first can be better learned from a quiet study of the various treatises which deal with the subject, and the latter only by a painstaking and prolonged attendance in the out-patient department of such an institution as this; and at most I can only hope to lead you to a further interest in and better understanding of these phenomena; and if I succeed in this, I shall feel that I have accomplished my task, even though I do not succeed in inducing you all to become the happy possessors of a modern ophthalmoscope and a large box of trial lenses and other means of dealing with these conditions.

When it is borne in mind how extensive are the ramifications of the optic nerves in our brains, and that the sight is by far the most important means of obtaining a knowledge of our surroundings in this life; that we have two eyes, which, in addition to our optic nerves, are furnished with three pairs of motor cerebral nerves which, acting under impulses derived from several cerebral motor centres, control and direct the several muscular movements of the eyes, themselves of a highly complex and extensive nature, and that the movements of the two eyes must be properly carried on in unison; and that, in addition to all this, the very sensitive fifth pair of nerves are largely concerned in the functions of the eye, it will be no cause for wonder that such organs are potent causes of headache and cerebral disturbance.

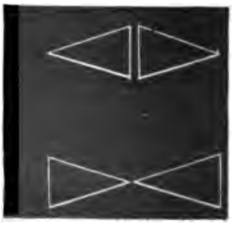
I would say at the outset that headaches due to ocular causes, however general and diffused they may become after they have once set in, invariably commence in one or both eyes themselves, or more commonly over one or both eyebrows, or the forehead, or over one or both temples, or over the root of the nose, and that I believe the great majority of such headaches are caused by ocular conditions, especially if they are constantly recurring, and are aggravated by the use of the eyes in reading or other kinds of close work.

LENSES.

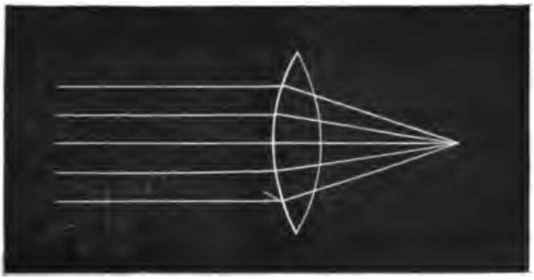
Before proceeding further it is desirable that I should remind you of the properties of light as affected by lenses or refracting materials. Light, so long as it passes through a medium of the same density, such as the air, travels in straight lines; but in passing from a rarer to a denser medium its rays are bent or refracted. The effects of interposing a glass prism in the path of a ray of light will exemplify this, and the following diagram will shew the effects of such a medium on the path of a ray of light.



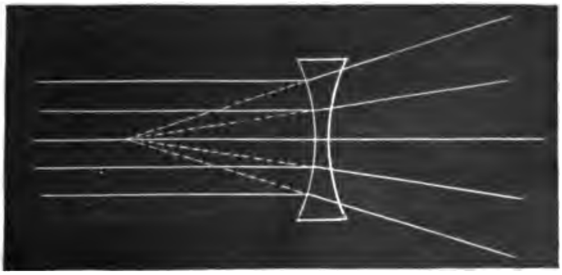
Such a ray is bent, both on entering and leaving the prism, towards its base, so that supposing *a* to be a candle and *d* the eye of an observer, the latter will see the candle, as he thinks, at *d*, this being the point towards which the ray he sees would run if it took its usual course in a straight line according to his usual experience, whereas the candle is really at *a*. The candle therefore appears to him as if displaced towards the apex of the prism. Convex and concave lenses may in like manner be considered as composed of two prisms. Convex as prisms with their bases together. Concave as prisms with their apices together. Convex glasses therefore so refract parallel



rays of light that they meet at some point on the other side. Now the greater the angle of the prism, the more obliquely the ray falls on its surface and the greater is the amount that it is refracted; thus it would be more correct to look on spherical glasses as constituted of a series of prisms so placed that the further they are from the centre the greater their angle of refraction, and, therefore, the further from the centre of the lens the point at which the ray enters, the more it is refracted. In this way we find that convex lenses bring their peripheral rays to a focus at the same point as the more central rays, thus:—



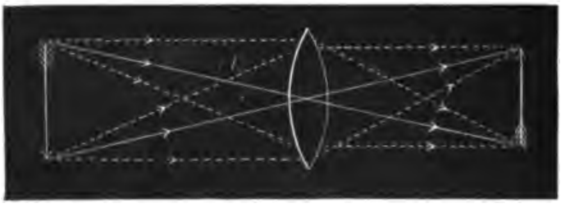
while concave glasses so disperse them that they appear as if they were rays diverging from a point not far removed from the surface on which they first impinged, thus:—



Hence, the more curved or convex the lens, the more it refracts the light, and the closer therefore to it will be the point to which it brings parallel rays to a focus.

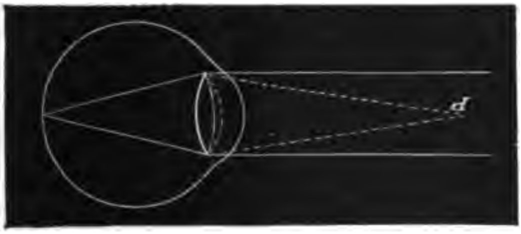
Lenses are numbered according to the greater or less distance from them of the point to which they bring parallel rays to a focus. The lenses used most by ophthalmic surgeons are numbered according to their focal length as measured by the metrical scale of measurements. Thus, a lens bringing parallel rays to a focus at one metre distant is taken as the unit, and is called a dioptre. Convex glasses are indicated by the sign + and concave by the sign — , D being used to denote the dioptre. A lens bringing the same rays to a focus at only half a metre distant is twice as strong, and is called a + 2 D, and so on. It will be seen that the ray passing through the centres of the curved surfaces undergoes no refraction. This is known as the axis or principal ray.

Now if an object is brought to a focus by a convex glass it will appear inverted at its point of focus; this is due to the fact that rays of light from all points of the object pass through the centre of the lens without being refracted like the principal ray, and so the image becomes inverted. These rays are called the secondary rays, and the point at which they all cross is called the optical centre. For practical purposes this may be considered as the case, though theoretically it is found that the principal ray alone is not refracted, the secondary rays being refracted so as to cut the axis at two points, called the nodal points, but these are close together and may for practical purposes be considered as one.



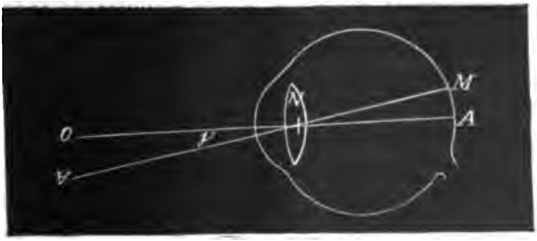
I must now draw your attention to the eye itself as an *optical instrument.* When the small size, quarter-inch about, of the pupil is borne in mind, it will easily be understood that rays of light emitted from distant objects can only impinge on and enter so small an aperture if they are parallel, all other rays falling on other parts of the face or body; therefore the eye is only concerned in bringing parallel rays, those emitted by objects twenty feet or more distant, and diverging rays emitted from near objects, to a focus. The normal eye is so constructed that in a condition of rest parallel rays entering it are so refracted that they are brought to a focus on the retinal layer of rods and cones; therefore, as parallel lines never meet, the eye at rest is focussed for infinity.

In order to bring the diverging rays emitted from a near point to a focus on the retina also, the eye is endowed with the ciliary muscle, which possesses the power of increasing its refraction by increasing the convexity of the curvature of the crystalline lens.



The dotted parts shew the rays emitted from a near object, *d*, and the lens increased in convexity by the act of accommodation.

We have seen that the ray passing through the centre of the curved surfaces of any convex lens is straight, and not refracted, and is called the axis; so an imaginary line passing through the centre of the cornea and the posterior pole of the eye, between the optic disc and the Macula Lutea or Yellow Spot (Y.S.) is called the optic axis, *O A* in fig. But this must not be confused with the visual axis, or line of vision, *M V* in fig., which passes from the object looked at to the M.L. and cuts the optic axis at the optic centre or so-called nodal point, *N*, at an angle of 4 or 5 degrees on its inner side.



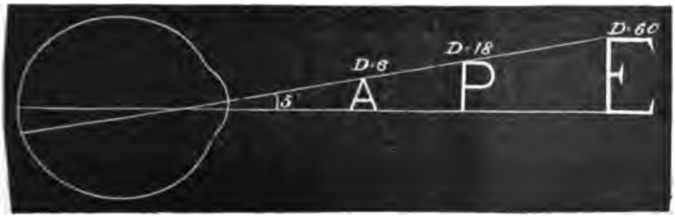
From this it will be seen that when the normal eye is looking straight at its object, the corneas have an appearance as if the eyes were not quite fixed on the object, but were slightly divergent, which gives a soft expression to the eye. Now this angle varies in different individuals, the average being 4 or 5 degrees, and indeed in some is very slight, the axis of vision and the optic axis may actually coincide, when we have the piercing eye of the novelist, which is rightly emphasised by them as a rarity. On the other hand, it may be actually reversed, the axis of vision cutting the optic axis on its outer side, when we have an apparent strabismus convergens though no real convergence of the visual axes exists. I shall have more to say on this point in my next lecture in dealing with Hypermetropia and Myopia. Sometimes this apparent strabismus is so marked that, in consequence of the deformity produced, we are consulted by patients with a view to its cure; but of course such cases in no way call for or justify any operation. Hence, though the expression of the eyes is chiefly due to the conformation of the lids, it is in part due to the optical construction of the eye itself.

Before proceeding further it is necessary that I should say a few words as to the visual functions of the eye in perceiving surrounding objects. The sense of sight is divided into three functions—1, the perception of light; 2, the perception of colour; 3, the perception of form.

1. The function of light perception and its variations in ocular disease has not been sufficiently studied to be at present of any great importance to us, and consists in the power to see light, the minimum amount which can be perceived being called the Light Minimum, while the smallest difference between two lights of different intensity which can be seen is called the Light Difference.

2. The power of the eyes to see colours, too, will hardly be necessary for me to dwell on here, being a factor chiefly of importance in considering structural disease of the eye and optic nerve in which this function is impaired.

3. I must however say a few words in explanation of the phenomena of form perception, which is the power of the eye to perceive forms, such as black letters on white ground. This power is most acute at the Y. S., getting gradually less acute the further from the centre, being very imperfect at the periphery of the retina, so that if we wish to see anything clearly, we must so direct our eyes that the image of the object shall fall on our Y. S. — in each eye. Now the acuity of this part of the retina has been ascertained with great nicety, and it is found that, given average good daylight, if an object is to be clearly seen, it must be of such a size as to subtend an angle of 5 min. A reference to the following diagram will shew that objects of varying sizes may all make an equally large image on the retina—that is, all subtend an angle of 5 min.—if placed at various distances from the eye; therefore, to ascertain the acuteness of vision for objects looked at, we must know not only their size but also their distance from the eye. For this purpose Prof. Snellen many years ago brought out types founded on the average acuteness of vision in people with normal eyes. These types graduate in size, and are numbered according to the greatest distance at which they can be seen in good daylight. The patient's distance from these therefore must also be ascertained. Thus, if a patient placed 6 metres distance can see 6 m type, we say his vision $= \frac{6}{6} = 1 =$ normal; but if a patient so placed can only see 60 m type, the type which should be seen at 60 m distance, then we say his vision $= \frac{6}{60} = \frac{1}{10}$ of normal. Thus accurate records, expressed in the form of a fraction, can be obtained of this acuteness, the upper figure or enumerator noting the distance, and the

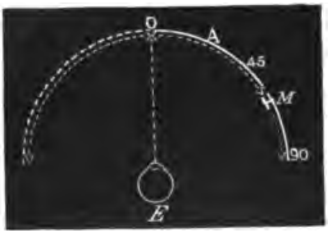


under figure or denominator noting the size of the type seen. In this way varying conditions of acuteness of vision can be ascertained.

The area of this acute vision corresponds to the fovea centralis of Y.S. and is very small, as can easily be seen by looking at the words in the page of any book, when it will be found that so long as the eye is fixed on one word, at most one or two words on either side, or in the line above or below, can be seen at the same time.

The yellow spots are called identical spots, because if we are to see singly objects with two eyes the eyes must be so directed that the image of the object looked at falls on this spot in each eye, otherwise we see two objects and suffer from double vision.

Now as regards the acuteness of visual perception at other parts of the retina we have no such precise standard, but we are accustomed to measure the area over which objects and colours can be seen, and this area is known as the Field of Vision (F.V.). This is done by the Perimeter, the principle of which is shewn in the figure. A is an arm, which is the quadrant of a circle, and revolves around a pivot at O, and can therefore be placed in any position, either Up, Down, Right or Left, etc. In the fig. it is shewn placed to the Right, the dotted lines representing it placed on the Left side of the patient. The arm carries an object, M, which can be moved along the arm from any point from 0 to 90°. One eye is examined at a time (the other being closed), and is placed at E′, and *all through the examination keeps looking at an object at O,* while the point on the arm at which the M passes out of view is noted. The position of the arm is noted on a chart around the periphery of



the circle, O being its position when vertically upwards, etc., while the point on the arm where the object passes out of sight is noted on the chart, o° being the centre, the point looked at, the distance from which towards the end of the arm is noted by concentric circles up to 90°, which correspond with the end of the perimeter arm.

The chart for the right eye, given below, shews the F.V. to extend outwards to a point beyond the level of the eye when looking straight forwards.

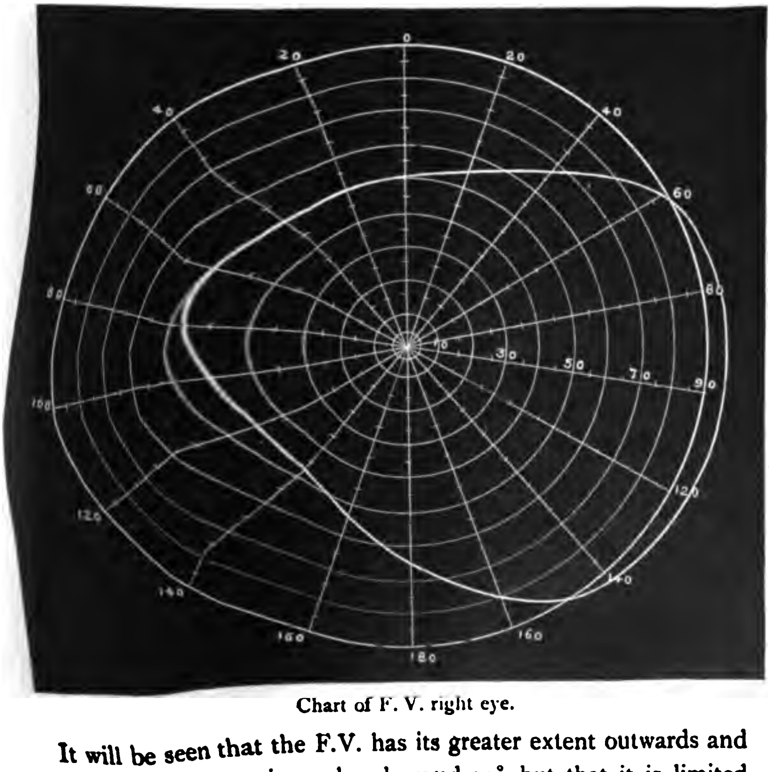
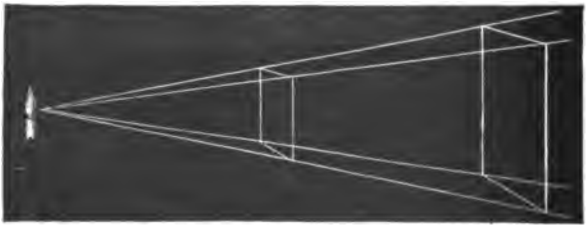


Chart of F. V. right eye.

It will be seen that the F.V. has its greater extent outwards and downwards, where it reaches beyond 90°, but that it is limited above by the forehead to 50°, and on the inner side by the nose to 45°; not that these organs are the direct cause of being unable to see here, for it is found that the retina over these areas is really blind to light, hence we are spared the annoyance of constantly seeing our noses and eyebrows. The F.V. is largest for white and blue, being smaller for colours; the F. V. for red being smaller than that for blue, while that for green is smaller than that for red. It is found, however, that all colours can be seen out of the periphery if sufficiently illuminated, so that there is no absolute colour-blindness of the peripheral parts of the retina, but only diminished sensitiveness to coloured light.

In order to see forms they must be sufficiently illuminated, that is, there must be enough light for the retina to be stimulated for the visual function, and for acute vision the light must be full and good. Daylight, without the direct rays of the sun, may be taken as the standard of good light to see by, and is considered to be white. When the light is excessive the eyes possess, in the contraction of the pupil to light, the means of reducing the amount entering the eye to what is comfortable within moderate limits; but beyond these points excessive light may cause not only headache and distress from over-stimulation of the retina, but also from the great strain put upon the iris to maintain sufficient contraction of the pupil in the endeavour to prevent this. In the most extreme cases excessive light may cause temporary and even permanent damage to the retina; hence we sometimes see cases of so-called snow-blindness, or blindness from looking at the sun or electric light or lime light, but with these phenomena I am hardly concerned to-day, as I propose rather to consider the results of strain on the muscular or dynamic functions of the eye. I must however say a few words as to illumination, especially by artificial light.

Light radiates in straight lines in all directions *equally* from its source (see diagram), hence the amount of light received



upon a given area, say the page of a book looked at, depends on the distance of such book from the source of light, there being a loss of illumination in a rapidly increasing ratio as the book is removed further from the source of light. The law being "That the amount of light falling on a given area is inversely as the square of the distance between the object and the light." Therefore, it follows that a light placed two feet distant will throw on a given area four times as much light as a light four feet distant, and not twice as much as might be supposed for the square of 2 (2 × 2) = 4, but the square of 4 (4 × 4) is 16, that is not twice but four times as much as the square of 2, therefore inversing the figures we find this statement to be correct; hence the great importance in the case of artificial light, whose distance we can control, of having the light near the object to be seen. This explains a preference sometimes found in people for a candle to a lamp in reading, because though a candle gives less light, it also gives comparatively little heat, and can therefore be tolerated close to the observer, and, being light and portable, can be placed so near the page that the latter thus receives more light than from a better illuminant placed further away.

The same law governs the amount of light reflected from a near point, say the page of a book, which falls on the pupilary area and so enters the eye, and thus is explained the common tendency to bring the book nearer and nearer the eye if reading in a fading light, such as twilight; for with each approximation of the book to the eye the amount of light reflected from the letters and entering the eye through the pupil is increased in the same rapid ratio. Of course a point is at length reached when the book has to be put down from inability to keep the eye focussed so near, or from insufficient illumination. Compared with daylight, which we have called white light, all artificial lights are inferior.

If analysed as to their component rays, these are all found to be too rich in red and green rays, especially the red, and are therefore more or less of an orange or yellow hue. Another drawback, too, is that they give so much heat, which causes dryness and irritation of the conjunctiva, and hence they cannot be tolerated too near the eye.

They may be divided in three classes according to the amount of heat they give, thus:—

1. The electric light gives the maximum of light with the minimum of heat, and is therefore the most desirable illuminant. Admitting that the pure electric light (say the Brush light) has properties which render it undesirable for the interior of buildings, and that its qualities are injurious to the eye, the same cannot be said of the "Swan incandescent light," which is in reality similar to all other artificial lights in being caused by carbon in a state of incandescence, but the carbon being unconsumed and unoxydised, little heat is therefore produced.

2. Gas gives a good light, but with perhaps a maximum of heat; and in the same category may be placed the petroleum oils in use.

3. The fats, and fat oils, such as colza, give a good light if the combustion is good, but perhaps not so good a light as gas and petroleum, but they have the great advantage of giving less heat.

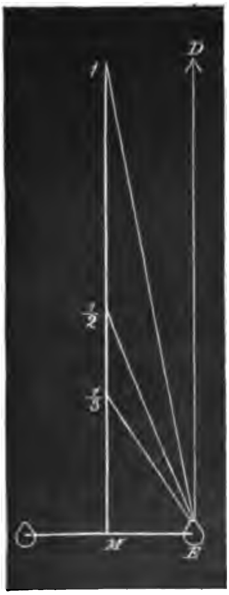
It will be apparent therefore how desirable it is for our eyes that we should have electric light to work by. On the other hand, while gas is a superior light to its predecessors, what we have gained on the score of light is somewhat counterbalanced by the great heat which it gives out; and to my mind our fathers, with good old-fashioned colza oil lamps, were in some respects better off than we have been with gas and petroleum, which, however, have come into vogue on account of their cheapness, and perhaps even more on account of the ease with which they can be lighted and the little attention they require; for while gas has no wicks to require trimming, petroleum, though involving some attention in this respect, gives no trouble hardly, as compared with colza oil, on account of the slight consumption of the wick which these light oils cause.

For comfort, while as much light as possible should fall on the object looked at, as little as possible should enter the eye from other sources. Hence, the light should be well shaded from the eyes by some opaque material; but this should not interfere with the light falling on the object looked at. In this respect modern lamps are superior to the ones formerly in use. In the absence of electric light, a good colza oil lamp is in my opinion the best artificial light to work by, on account of the little heat evolved, and should be used by all who suffer from ocular distress in working by artificial light.

Bearing in mind the properties of concave mirrors to collect the rays of light and throw them in increased quantities on any given area, it is a matter of astonishment to me that they are not more resorted to to increase illumination in offices and places where the light is chiefly required in a given place always. By this means more light might be obtained where wanted, with less gas, therefore at less expense, and with less heat and less contamination of the atmosphere with products of combustion.

The next point we have to bear in mind is that we are furnished by nature with two eyes, 2½ in. apart on the average; and as the single eye is in a state of focal rest when looking at distant objects emitting parallel rays, so the position of dynamic rest of the two eyes is one in which they are maintained in a state of parallelism in their direction, as in looking at distant objects and in the same horizontal plane. Moreover, their horizontal axes must each be also maintained in the horizontal plane. Now this position of equilibrium can only be maintained with ease provided there is an equal state of tension and antagonism between the various muscles which turn the eyes up and down or in and out—that is, the recti muscles—while their horizontal axes are maintained in the horizontal plane by a similar opposing action between the oblique muscles, which rotate the horizontal axes of the eye around its antero-posterior axis.

As each eye has to change its focus by an effort of accommodation when looking at a near object, *so* in *order* that we may have *single* vision with two eyes, each eye must be converged towards this near object by the internal recti if the image in each eye is to fall on its Y. S. Hence, with every change in accommodation there must be an associated convergence of the eye. If we suppose this object to be 1 metre distant, then, for an effort of accommodation = 1 D, the eyes must be converged to a point 1 metre distant—that is, make what is known as 1 metre angle of convergence—each addition of 1 D of accommodation requiring a further convergence of like extent, which we measure according to this standard. Thus, eyes focussed for ½ metre distant must be converged to ½ metre distance; that is, accommodated 2 dioptres in focus and converged 2 m. angles. It is found however that, within limits, either one of these functions may be exerted without its fellow, or more or less than its fellow, the association being more or less a loose one. Complete comfort, however, is only obtained when these two functions act in close unison and harmony. Various cerebral centres preside over these combined movements.



In order to see to the best advantage and with the greatest ease the object looked at, such as writing or reading, should be placed immediately in front of the eyes in the middle line, and at such an angle that the line of vision forms a right angle with the plane of the surface looked at.

If placed on one side the convergence is not equally divided between the two eyes; moreover the object is further from one eye than the other, and therefore cannot be focussed equally in each eye, hence discomfort arises from disorder both of convergence and accommodation; while if the object is not placed at right angles to the visual axes a foreshortening of the letters takes place which causes them to be less distinct. There is a further change that takes place in the eye in looking at a near object, and that is contraction of the pupil, each amount of accommodation effort being accompanied by a corresponding contraction of the pupil.

It is supposed that there is one centre for this complex function of convergence and accommodation of pupil contraction, but to my mind the fact that each function can be exerted without its fellow within certain limits is rather in favour of there being distinct centres for each, but closely connected, and therefore acting best in company. From all this it will be seen that discomfort and pain may arise (1) either from want of proper performance of the act of accommodation by the ciliary muscle; (2) from want of proper action and equilibrium maintained between the various external muscles engaged in keeping the two eyes directed in a proper manner. Thus we find trouble arising from (1) failure or strain in accommodation; (2) failure or strain in the external muscles of the eyes. Distress may be due to more work being put on the eyes than nature has adapted them to bear, or by their capacity for work being materially reduced in consequence of some enfeeblement of their functions from ill-health.

It may be asked how long can the effort of accommodation be maintained in the normal eye in a healthy person? To this I would say that probably 8 or 10 hours a day, not continuous, is the maximum that this effort can be maintained without discomfort. Attempts to exceed this are liable to cause trouble, (1) from distress and failure of the effort which we call asthenopia; (2) from spasm being set up in the muscles concerned.

FAILURE OF ACCOMMODATION OR ASTHENOPIA.

In this case after a time the person will experience a sense of fatigue and aching in the eyes, and if the efforts are persisted in this will spread to the forehead, and further efforts will result in failure of the function when all reading becomes impossible, the print becoming indistinct and the letters running into one another from inability to maintain accommodation on the one hand, and of the convergence on the other. After a short rest the efforts may be renewed, but again failure takes place on each successive trial after increasingly short periods, till headache, giddiness, and nausea supervene, and the work has to be given up.

SPASM OF ACCOMMODATION.

In this condition, if the efforts are persisted in after the above symptoms have set in, the result may be a tonic spasm of the ciliary muscles, which will not relax completely on discontinuing the effort, hence the eye remains focussed for a near point, say 1 m., and consequently all distant objects appear indistinct. Such persons often resort to weak concave glasses to correct their short sight, but the slight amount of this, associated as it is with pain and aching in and about the eyes, and distress in looking at near objects, should always make us suspect the real nature of the trouble. In all such cases if a solution of atropine, gr. iv., ad ℥ i., is put into the eyes the nature of the malady is revealed; for by causing paralysis of the ciliary muscle it removes the short sight. In some severe cases atropine has to be used for some days before the spasm is relaxed, and this is the best treatment for such cases, because it at once gives relief to their distress, and prevents them from using the distressed function, and therefore removes the danger of the spasm being again set up. After a time it may be left off, and the patient cautiously allowed to resume the use of the eyes for reading, &c.

In the most severe cases spasm of the convergent muscles is set up as well as spasm of the ciliary muscles, causing strabismus convergens, with consequent double vision, to be added to the above symptoms, and then the constant double vision will excite giddiness and even vomiting. Many years ago a professional brother consulted me in this state, brought on by hard study for twelve or fourteen hours a day for several weeks in preparing for the F.R.C.S. and M.B. Lond., and so severe were the headache and vertigo and so persistent the vomiting, that fears of brain disorder were entertained both by himself and some of his medical friends; but under rest and suitable treatment, all his troubles passed off without any further evidence of cerebral disease, nor has he since had any recurrence of these troubles.

We see, then, that in cases of asthenopia and in spasm of accommodation, with or without spasm of convergence, there is experienced, in addition to the short sight, pain in the eyes and head, which are both aggravated by all attempts to look at near objects, while, if spasm of convergence is present, there is also vertigo and even vomiting. In some cases spasm of accommodation and convergence also occasionally occur without obvious over-use of the eyes, and is then due to some disturbance of the cerebral centre presiding over this function. This occurs in hysteria and in some other conditions. It sometimes happens that a tonic spasm is also found to spread to the orbicularis muscles, when a spasmodic closure of the eyes is added to the other troubles. When this is present without any of the usual causes, such as corneal disease and irritation, spasm of accommodation should always be suspected.

It will of course be understood that if the general health and general tone is bad, or if by reason of the patient working by a bad light, and therefore bringing his work nearer to him, thereby increasing the strain on his accommodation and convergence, or if both these circumstances are combined, his eyes will break down, so to speak, the sooner.

Amongst some of the commoner causes of weakened power of accommodation for near work I would specially mention debility, sexual excesses, and masturbation; and in addition to these, in females, dysmenorrhœa and many uterine and ovarian disorders, which all seem potent predisposing causes of these visual troubles. Diphtheria is often a cause of complete paralysis of accommodation, followed by weakness of the function for some weeks.

NEURASTHENIA.

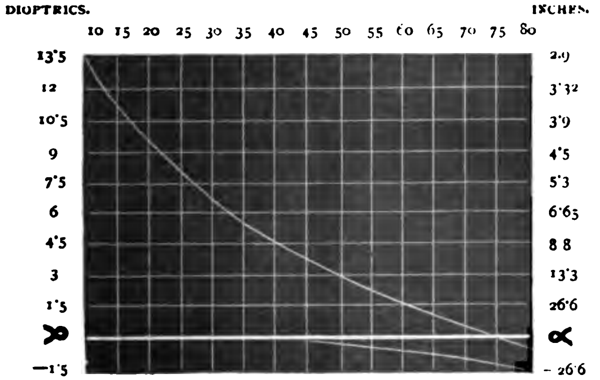
I wish now to specially allude to one condition which, above all others, leads to these troubles, and in which some other special symptoms are superadded. I refer to that state known as neurasthenia. It is quite common for persons suffering from this state to be unable to read for more than a few minutes at a time. All efforts to exceed this cause headache, vertigo, discomfort in the eyes, lachrymation, and conjunctival injection and irritability, failure of vision, and even vomiting. In these cases there is often failure of convergence before failure of accommodation. Thus we find that if while they look at a near object an opaque disc or the hand is placed before one eye, this at once deviates outward, though the uncovered eye continues to see clearly. Indeed these people often find out that they can see longer and with less discomfort if they cover one eye, thus removing the necessity to keep both eyes fixed on the object by maintaining convergence; but the chief interest in these cases is the peculiar way in which the function of the retina suffers.

There are many symptoms that the retinal function is readily exhausted. Hence we find that even when looking at distant objects, requiring no focussing effort, while these are readily seen at first, they soon fade away and become indistinct. Their acuteness of vision is often specially acute, $V = \frac{6}{4}$ or so, but it fluctuates, being only maintained for a few moments. They suffer from temporary scotomata or blind patches in their F.V. Optical impressions are not long retained, and the retina is hyper-sensitive to light, which causes a sense of dazzling; but the most interesting fact is the evidence of retinal exhaustion afforded by taking a chart of the F.V. with the perimeter. If this is commenced on the outer side, it is found to extend to the full area, 90 degrees; but if we gradually work round, by the time we come to the outer part of the F.V. again, we find it is contracted. This contraction having been brought about from exhaustion of the retinal function in keeping the visual attention directed during the necessary steps of the examination, so that the F.V. as shewn in a chart is a spiral one, which is characteristic of this affection.

The treatment for these cases is the treatment of their general condition, together with rest for the eyes, and blue or dark glasses to subdue the light entering them. A lotion of acid boracic, gr. x., and cocain, gr. i., ad ʒ i, may lessen the conjunct. irritability and afford relief. If they are compelled to read, &c., weak + glasses to relieve accommodation, combined with prisms with their bases in to lessen convergence, and slightly blue tinted to subdue the light, are the best means we can employ to assist them somewhat for this purpose, and may enable them to do so in comfort for half-an-hour instead of only five minutes without such aid.

PRESBYOPIA.

I now wish to direct your attention to what is called Presbyopia "or old sight." It has been shewn by Donders that the nearest point for which the eye can be focussed is constantly receding from the eye as age advances from the age of 10 up to 80; probably this receding of the near point commences from the earliest infancy, but observations made on children under 10 years were felt to be unreliable. The accompanying diagram shews this well, the accommodation being represented by the diagonal line, the ages being given at the head, whilst on the left hand the amount of accommodation possible is denoted in dioptres, on the right hand side their equivalents being given in inches, *denotes the distance for which the Eye is focussed.*



This is due not to failure of the power of the ciliary muscle, though this may assist, but to changes in the lens itself, which becomes less and less elastic as age advances, and in consequence is less and less affected by the relaxation of the suspensory ligament, brought about by the action of the ciliary muscle, which at length effects little or no change in its curvature, and hence no alteration in the focus of the eye.

When this loss of accommodation has reached such a degree that the point of near vision is removed to 8·8 inches or beyond, trouble in seeing near objects first arises, and so this point has been fixed as the one at which what we call Presbyopia commences. It will be seen therefore that though for practical purposes useful, it is quite an arbitrary definition. It is no new condition, but only the attainment of a point in a state which progresses steadily from earliest infancy to old age.

The total amount of change in the focus of the eye that can be brought about by the ciliary muscles is called the amplitude of accommodation, and this we see is constantly decreasing with age. Its amount from time to time is expressed in numbers corresponding to the change in focus which would be produced by placing convex lenses before the eye in a state of rest to attain the same point of focus. This we see in a lad 10 years old amounts to 13·5 dioptres, and that the eye, previously focussed for infinity, can with this amount be focussed to a point 2·9 inches from the eye; while at 40 years it amounts to only 4·5 dioptres, with which the eye can only be focussed to 8·8 inches; therefore at this age what we call presbyopia commences. But it may be said that surely 9 inches is as near as any person wants to see.

We have previously seen that in order that letters may be properly seen they must be sufficiently illuminated and at such a distance as to subtend an angle of 5 min. Now taking ordinary average print we find that, given good illumination, it must not be further off than 18 in. to be easily deciphered, and for comfort will be held at about 15 inches.

Further, it is our experience that *not more than half of our available accommodation can be exerted continuously;* therefore when the near point is reduced to 8·8 in. we have only

4·5 dioptres of accommodation, only half of which can be continuously used—that is, 2·25 dioptres; but this will only bring the focus up to 17·48 in., which is therefore the nearest point we can see continuously. Therefore a man of 40, whose near point is only 8·8″, can only see continuously at 17·48 in. (say 18 in); hence if, by reason of the type being small or the light poor, he is compelled to bring his book nearer, he soon suffers from fatigue with pain in and about the eyes, and conjunctival injection supervenes; hence this point is taken as that at which presbyopia commences.

Now when he has reached the age of 45, at which his near point has receded to 11 inches, he is unable to read at ordinary distance for more than a short time, and then only with a feeling of fatigue and distress, and hence desires to put his book farther away, to 22 inches. But in order to see at this distance, he must compensate himself for the smallness of the retinal image by increasing the brilliancy of his illumination. Hence comes an increasing tendency to forego reading by artificial light, which is never so good as daylight, or to resort to special means, such as better light and bringing it closer to the object looked at, to increase the illumination, for being unable to focus nearer it avails him nothing to approximate the object to his eyes like a younger person would, and thereby increase the amount of light entering his pupils emitted from the object looked at. To such a man spectacles have become desirable if he would avoid ocular strain and its consequences, and the time is close at hand when they will become a necessity. The same troubles will also arise from time to time in those whose glasses no longer sufficiently correct their Presbyopia.

REPORTS OF CASES.

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KOCH'S TREATMENT AT THE GENERAL HOSPITAL.

CASES UNDER THE CARE OF DR. SAUNDBY.

Case 1.—*Phthisis of Left Apex; suspected mitral disease; laryngeal ulcer; progress of case.*

C. H., 24, ironworker, admitted Dec. 30th complaining of cough with pain in the back and chest. Duration of illness twelve months. No family history of phthisis, but an aunt died of pleurisy, aged 59. The only serious illness he could remember was rheumatic fever when he was 14; but he had been twice operated on for an injury to his hand. At Christmas, 1889, he caught cold. This was followed by cough, with yellow blood-streaked sputa, and he was told by the doctor that he had inflammation of the lungs. Although he recovered sufficiently to return to work, he had never lost his cough, and for the last eight months he had been too weak to continue his occupation. During the fortnight before admission his cough was worse, he was sweating at night, and he thought he had lost weight.

On admission there was some œdema of the legs. T. 98, R. 29, P. 76, weight 9 st. There was some evidence of dyspepsia, with nausea and occasional vomiting; liver and spleen normal. No cardiac murmur could be detected, but the first sound was rough and the pulse mitral in character. There was deficient movement, and dulness on percussion on the left side of the chest above the third rib in front and the spine of the scapula behind The breathing in this position was bronchial, and accompanied by crepitation after cough. His urine contained a trace of albumen No tubercle bacilli were found in the sputa.

Dec. 31st. 12 noon. *First injection*, 0·001 cc.; 12 midnight, T. 101·5°. He complained in the evening of some headache.

Jan. 1st. He felt rather sick and was hoarse; on laryngoscopic examination some congestion was observed in the interarytænoid space.

Jan. 2nd. 12 noon. *Second injection*, 0·003 cc. In the evening he complained of a cold feeling down his back, and increased cough. Temp. at 10 p.m. 103·5°.

Jan. 3rd. The night had been disturbed by coughing.

Jan. 4th. A second laryngoscopic examination shewed a yellow spot like a superficial ulcer in the interarytænoid space, behind the posterior extremity of the right cord. 11 a.m. *Third injection*, 0·005 cc., followed by chill and pain across chest. Cough less. Temp., 9 p.m., 103°.

Jan. 6th. 11-15 a.m. *Fourth injection*, 0·01 cc. *Tubercle bacilli* were found in the sputa this day. The injection was followed by headache, looseness of bowels, increased sweating, and cough. Temp, 9 p.m., 105°, weight 8 st 10 lbs.

Jan. 8th. 12 noon. *Fifth injection*, 0·01 cc. Temp., 10 p.m., 102°, less cough and sweating, voice clearer.

Jan. 9th. Passed a good night. Sputa collected for twenty-four hours measured 70 cc. Temp. 10 a.m 100°, 10 p.m. 99·6°.

Jan. 10th. 12 noon. *Sixth injection*, 0·01 cc. Sputa 62 cc. Temp. 10 p.m. 101·8°

Jan. 11th. Passed a comfortable night. Sweating diminished. Sputa 56 cc. Laryngoscopic examination shewed the ulcer plainly visible. Temp. 8 a.m. 98°; 4 p.m. 100°; 8 p.m. 99·4°.

Jan. 12th. 12 noon. *Seventh injection*, 0·01 cc. Sputa 46 cc. Temp. 8 p.m. 102°.

Jan. 13th. Temp. 8 a.m 99°. Passed a good night. Sputa 40 cc.

Jan. 14th. Temp. 8 a.m. 99°. Sputa 36 cc.

„ 15th. „ „ „ 100° „ 46. Weight 8st. 13lbs.

„ 16th. 11.50 a.m. *Eighth injection*, 0·01 cc. Temp. 10 p.m. 103°. He had been sweating less lately, and no distinct crepitation was audible. The ulcer in the larynx was nearly healed. Sputa 60 cc. At night the cough was troublesome.

Jan. 17th. Sputa 56 cc. The Temp. rose again in the evening to 101·7°.

Jan. 18th. 11.35 a.m. *Ninth injection*, 0·01 cc. 10 p.m. Temp. 102°. His cough was troublesome at night. Sputa 60 cc.

Jan. 19th. Sputa 56 cc. Evening Temp. 10 p.m. 101°.
„ 20th. „ 46 cc. „ „ 8 „ 101°.
„ 21st. „ 60 cc. „ „ 10 „ 100°.
„ 22nd. 11·40 a.m. *Tenth injection*, 0·02. T. 8 p.m. 104°. Tubercle bacilli still present in sputa, amount 46 cc.

Jan. 23rd. Sputa 100 cc., greatly increased in quantity. Evening Temperature 101°. Weight 8 st. 12½ lbs.

Jan. 24th. 11 a.m. *Eleventh injection*, 0·02 cc. Sputa 96. Temperature 8 p.m. 103°.

Jan. 25th. He had passed a good night. Sputa 96 cc. Laryngoscopic examination shewed the ulcer quite healed, but there was still some congestion of the cords.

Remarks.—This case has been related at length as an illustration of the treatment. It should be stated that all the patients under Dr. Saundby's care receive no drug treatment whatever; they are placed on house diet, and are allowed to get up and be about in the wards every afternoon. The temperature is taken every two hours day and night; the sputa are measured once in twenty-four hours, the urine is examined every day or two, they are weighed every week, and tubercle bacilli are looked for at intervals of about a week. The results of treatment so far are that his night sweats have diminished but his cough is much the same, while the amount of expectoration has lately increased. During the first week he lost 4 lbs. in weight, and almost as speedily regained 3 lbs. Lately he has again lost ½ lb., which may be attributed to the irregular temperature which has existed even on days when no injections have been given.

It is noticeable that this patient, although sometimes looking ill from the effects of the injections, made very little complaint, and the various facts noted were only brought out by questioning. It is suggested, from observations in many cases, that the reaction is attended by a considerable amount of depression of general sensibility. As a rule, the patients sleep well after injection in spite of the high fever. In this case the most interesting event has been the development and healing of the tubercular (?) ulcer in the larynx, where there was no suspicion of the existence of any disease.

Case 2.—*Phthisis at Right Apex; Graves' disease (?); progress of case.*

W. J., 24, filer, admitted Dec. 30th, 1890, with cough and expectoration. Duration of illness, since the beginning of last winter. Mother died of phthisis aged 50. He had been sweating at night lately. Patient was fairly developed and well nourished He had lost one eye from an injury; the other was very prominent, he thought more than formerly; and there was some fulness of the thyroid. His face was anæmic. He had a venereal sore five years ago, and there was some thickening over the left tibia. T. 98·4, P. 80, R. 24. His cough was not very troublesome, sputa scanty, mucopurulent, about 60 cc. daily. Dulness, bronchial breathing and crepitation over the right upper lobe behind and in front. Urine, no albumen. Weight, 8 st.

Dec. 31st. 12 noon. *First injection*, 0·001 cc. Temp., 10 p.m., 99·5.

Jan. 1st. Tubercle bacilli found in sputa. Felt scarcely any effect from injection.

Jan. 2nd. 12 noon. *Second injection*, 0·003 cc. Temp., 10 p.m., 100. No other effects.

Jan. 4th. 11 a.m. *Third injection*, 0·006 cc. Temp. 8 p.m. 102.

Jan. 6th. 12 noon. *Fourth injection*, 0·01 cc. Temp. 10 p.m. 102. Weight 8 st. 3 lbs.

Jan. 8th. 12 noon. *Fifth injection*, 0·01 cc. Temp. 8 p.m. 101·5. Sputa 62 cc.

Jan. 10th. 12 noon. *Sixth injection*, 0·01 cc. Temp. 10 p.m. 102·2. Sputa 60 cc.

Jan. 12th. 12 noon. *Seventh injection*, 0·01 cc. Temp. 8 p.m. 102. Sputa 70 cc.

Jan. 16th. 12 noon. *Eighth injection*, 0·01 cc. Temp. 8 p.m. 102. Sputa 30 cc. Weight 8 st. 4 lbs.

Jan. 18th. 11.35 a.m. *Ninth injection*, 0·01 cc. Temp. 8 p.m. 102. Sputa 30 cc.

Jan. 19th. After yesterday's injection he felt sick and coughed a good deal. Sputa 76 cc.

Jan. 22nd. 11.40 a.m. *Tenth injection*, 0·02 Temp. 8 p.m. 103·2. Sputa 30 cc. No tubercle bacilli were found. Weight 8 st. 5 lb.

Jan. 24th. 11 a.m. *Eleventh injection*, 0·02. Temp. 10 p.m. 103. Sputa 90 cc.

Remarks.—This patient has experienced scarcely any subjective effects from the treatment. He has slept well, had a good appetite, little cough, and no sweating. His body weight has gained steadily, which is probably due to the very moderate manner in which his temperature has been raised by the injections. The tubercle bacilli were not found at the last examination, but this does not prove that they have disappeared.

Case 3.—*Rapid Pneumonic Phthisis of Left Upper Lobe. Progress of Case.*

J. Mc H., 33, farm labourer, admitted Dec. 30th, 1891, with pain in the left side of his chest, dyspnœa and cough. Duration of illness, five months. No family history of phthisis. Illness began with pain in the side and had gradually got worse. He had lost 2 st. 10 lbs. in weight, had profuse night sweats, and his finger tips were somewhat clubbed. T. 100·4, Res 23, P. 82. Well developed, sparely nourished man. Bad appetite; some signs of gastric catarrh. Bowels confined; liver and spleen normal. Cough not very troublesome; sputa scanty, mucopurulent; about 40 cc. daily. There were dulness, bronchial breathing, bronchophony, and crepitation on coughing between the second and fourth ribs on the left side. Tubercle bacilli in sputa. No albumen in urine. Weight 9 st. 12 lbs.

Jan. 4th. 12 noon *First injection*, 0·001 cc. Temp., 8 p.m., 101.

Jan. 6th. 11 a.m. *Second injection*, 0·003 cc, Temp., 10 p.m, 101·5.

Jan. 8th. 11-30 a.m. *Third injection*, 0·005 cc. Temp., 10 p.m., 104·2.

Jan. 10th. 12 noon. *Fourth injection*, 0·005 cc. Temp., 10 p.m., 102·5.

Jan. 12th. 12 noon. *Fifth injection*, 0·01 cc. Temp, 10 p.m., 103·2. Weight 9 st. 13 lbs.

Jan. 16th. 11-50 a.m. *Sixth injection*, 0·01 cc. Temp., 10 p.m., 103. Sputa 40 cc.

Jan. 17th. No injection. Evening temperature 102·5. Sputa 36 cc.

Jan. 18th. 11-35 a.m. *Seventh injection*, 0·01 cc. Temp., 10 p.m., 103·5. Sputa 56 cc.

Jan. 19th. No injection. Temp., 8 p.m., 104. Sputa 26 cc.

Jan. 20th No injection. Temp., 10 p.m., 102·8. Sputa 30 cc.

Jan. 21st No injection. Temp., 10 p.m., 102. Sputa 10 cc.

Jan. 22nd. 11-40 a.m. *Eighth injection*, 0·02 cc. Temp., 9 p.m., 104·6. Sputa 20 cc. Tubercle bacilli present. Sweating more. Weight 10 st. 3 lbs.

Jan. 23rd No injection. Temp., 8 p.m., 103. Sputa 36 cc.

Jan. 24th. 11-5 a.m. *Ninth injection*, 0·02 cc. Temp., 10 p.m., 104·5. Sputa 40.

Remarks.—This patient was not such a favourable case as the former two, as he had fever on admission; yet he has improved much in appearance and has gained 5 lbs. in weight. He has often complained of headache and pain across the chest after injection.

Case 4.—*Phthisis at both Apices; profuse Hæmoptysis; progress of case.*

W. C., 24, mechanic, admitted on January 3rd for hæmoptysis, having just brought up about half a pint of blood. After reaching the hospital he coughed up several ounces of bright frothy blood. No history of phthisis in family. Patient was well till eighteen months ago, when he caught cold and had never been well since; but he kept at work until the Saturday after Christmas, when he had an attack of hæmoptysis for the first time, bringing up almost half a pint of blood. He was fairly developed and well nourished, but pale, and his fingers were a little clubbed. No œdema. T. 98, P. 84, R. 28, weight, 9 st. 1 lb. Appetite good, tongue slightly furred, bowels confined, liver and spleen normal. Night sweats. Cough troublesome in morning. Sputa muco-purulent and blood-streaked; quantity about 20 cc. daily. Large number of tubercle bacilli present. Slight dulness at both apices, with bronchial breathing and crepitation. Heart normal. A very faint trace of albumen.

Jan. 6th 11 a.m. *First injection*, 0·001 cc. Temp., 8 p.m., 100.

Jan. 8th. 11-30 a.m. *Second injection*, 0·002 cc. Temp., 8 p.m., 98.

Jan. 10th. 11-30 a.m. *Third injection*, 0·005 cc. Temp., 2 a.m., 101. Sputa 20 cc.

Jan. 12th. 11 a.m. *Fourth injection*, 0·01 cc. Temp., 10 p.m., 103·2. Sputa 20 cc.

Jan. 16th. 11-50 a.m. *Fifth injection*, 0·01 cc. Temp., 10 p.m., 103 5. Sputa 20 cc.

Jan. 18th. 11-35 a.m. *Sixth injection*, 0·01 cc. Temp., 10 p.m., 100. Sputa 10 cc.

Jan. 22nd 11-40 a.m. *Seventh injection*, 0·02 cc. Temp., 12 p.m., 103. Sputa 30 cc. No tubercle bacilli. Weight 9 st. 6½ lbs.

Jan. 24th. 11-5 a.m. *Eighth injection*, 0·02 cc. Temp., 12 p.m., 102. Sputa 36 cc.

Remarks.—There has been no return of the hæmoptysis since commencing treatment. He has gained 5½ lbs. in weight, and has suffered very little discomfort from the treatment. His night sweats have diminished, but the cough is much the same.

Case 5 —

W. R., 52, stableman, admitted on December 30th with pain in chest, shortness of breath, cough and expectoration. Both father and mother died of some chest troubles—father aged 59, mother aged 42. Patient had been a heavy drinker, but enjoyed good health till seven years ago, when he was in this hospital with "rheumatics." His present illness began two months ago. He was an emaciated but well-developed man, cyanosed, and unable to lie down. T. 100·5, P. 84, R. 26, weight 7 st. 8¾ lbs. Tongue coated. There were symptoms of catarrh of the stomach. Cough frequent, sputa abundant; tubercle bacilli present. Chest very emaciated, falling in above and below both clavicles, especially the left. Percussion note deficient in front at both apices, behind in the right supra spinous fossa. Crepitation, on coughing, at both apices before and behind. Heart normal. A faint cloud of albumen.

Jan. 8th. · 12 noon. *First injection*, 0·001 cc. Temp., 10 p.m., 100. Sputa 125 cc.

Jan 10th. 12 noon. *Second injection*, 0·003 cc. Temp., 8 p.m., 101. Sputa 120 cc.

Jan. 12th. 11 a.m. *Third injection*, 0·005 cc. Temp, 8 p.m., 103. Sputa 106 cc.

Jan. 16th. 11-50 a.m *Fourth injection*, 0·008 cc. Temp., 8 p.m., 104. Sputa 130 cc.

Jan. 18th. No injection, as he had an attack of acute rheumatism in the left wrist. Weight 7 st. 6 lbs. Sputa 120 cc.

Jan. 22nd. 11-40 a.m. *Fifth injection*, 0·01 cc. Temp., 8 p.m., 103·8. Sputa 120 cc. Weight 7 st. 6½ lbs. Tubercle bacilli present in fairly large numbers.

Jan 24th. 12 noon. *Sixth injection*, 0·01 cc. Temp., 8 p.m., 102 Sputa 140 cc.

Remarks.—This man's general condition was bad, though his physical signs indicated no extensive consolidation. His appetite has been poor. The effect of treatment has so far not been beneficial. He has lost 2¼ lbs. in weight, while there has been no improvement in the cough and expectoration. The attack of rheumatism interfered with the progress of treatment, but the case cannot be regarded as a favourable one at present.

CASE UNDER THE CARE OF DR. WADE.

Case 6.—*Phthisis at both Apices; progress of case.*

M. D, æt. 37, labourer, admitted December 31st, 1890. Well-developed but thin man, height 5 feet 9 inches, weight 9 st. 13½ lbs. For about eighteen months had been subject to a cough in the morning with little sputum; no night sweats or loss of weight. Five months ago he had a severe chill with shivering, since which he had had cough and pain across the front of the chest, and has sweated at night for the last four months, sputum gradually increasing, and four months and one month ago had some blood mixed with it. He has been short of food for the last five months. Average weight was 10 st. 12 lbs. Mother died aged 39, and his father's brother's son aged 37, of consumption. Cough frequent with pain referred to mid-sternum and front of chest at the same level. Dyspnœa only on exertion. Chest well formed, expanded well and equally. Over the front of the right side the percussion note was less resonant than over the left side, whereas at the back, the note at the left apex above the scapular spine was less resonant than at the corresponding part of the right side. Breathing harsh, with prolonged expiration at the right apex as low down as the third rib in front, with medium-sized crepitations heard occasionally. Some crepitations were also heard at the left apex after coughing. Expiration prolonged at the left apex and base behind. Sputum—3½ oz. in twenty-four hours—consisted of dark viscid masses in brown fluid; no blood present. Tubercle bacilli present, but not in large numbers. During the first week the temperature did not rise above 99°, and was normally about 98. He sweated freely each night; the cough and amount of sputum diminished to some extent. R. averaged 24, P. 90 in the morning, rather more at night.

Injections.

Jan. 6th. ·001 (1 milligramme), no constitutional reaction.

Jan. 9th. ·003, no reaction.

Jan. 10th. ·006. Temperature rose nine hours after to 100·4, P. was 100, R. only 18.

Jan. 17th. ·004, no reaction.

Jan. 18th. ·008. Temperature rose nine hours after to 101·6, P. 108, R. 28.

Jan. 20th. .01 (1 centigramme). Temperature rose seven hours after to 100°, P. 96, R. 28.

Jan. 22nd. ·01, no reaction.

Jan. 24th. ·015, no reaction.

Jan. 26th. ·02, no reaction.

After each injection which produced a reaction he had slight headache, and complained of some pain across the front of the chest, but suffered from very little actual discomfort. On the 12th the sputum was slightly rusty; and this was also noticed on the 18th. On the 25th and two following days he spat up a few pellets of blood mixed with the viscid secretions; on the other days the sputum was similar in character to that on admission. On the 20th no tubercle bacilli could be detected in the sputum examined. After the first injection the night sweats diminished considerably.

Condition on 27th.—Weight, 10 st. 1 lb. 10 oz.; sputum only about ½ oz. in last 24 hours, a little dark blood mixed with some of the pellets. Coughing very much less than on admission.

Physical Signs.—More loose crepitation heard beneath the second rib in front on the left side, and the expiration is harsher here than on admission. No crepitations heard to-day at all on the right side in front, but some heard on coughing just below the spine of the scapula behind. Otherwise the physical signs remain about the same. He says he feels much better and stronger in himself.

CASES REPORTED BY GILBERT BARLING, B.S., F.R.C.S.

For opportunity of observing the effects of injections of Koch's fluid I am much indebted to my colleagues Mr. Pemberton, Mr. Bartleet, Mr. Jolly, and Mr. Chavasse, who have kindly placed cases at my disposal. Those recorded are only part of the cases under treatment. They are not selected because they shew favourable changes or the reverse, but simply because they all happen to be side by side in the same ward. In a later number the future progress of these cases will be described.

Case 7.—*Tubercular Epiphysitis of Left Femur.*

Male, 19, admitted November 20th, 1890. History of injury to knee two years previously. The joint improved under rest and blistering, but relapsed after a second injury. When admitted, there was considerable thickening, heat and tenderness over the left internal condyle of femur; the measurement was an inch greater than the opposite side.

Dec. 9th. The swelling over the condyle was incised, and a mass of dense inflammatory tissue, three-quarters of an inch thick, was cut through before the surface of the bone was reached. Here a patch of softening granulation tissue was found and some soft carious bone leading into a small cavity in the lower end of the femur.

Dec. 27th. The wound was 2¾ inches long and ¾ inch wide in the middle, the discharge was moderate, the granulations were coarse and abundant. On this day, the temperature having been normal for days, and there being no evidence whatever of any other tubercular lesion in the body, the first injection of ·001 was given.

The following table gives briefly the salient points in the course of the injections.

Date.	Amount injected.	Temp. when injected.	Highest Temp. recorded	Remarks.
Dec. 27.	·001	98·5	99·8	From 6 to 10 hours after injection much sweating.
„ 29.	·003	99·8	100·2	Complaint of shivering and feeling sick.
„ 31.	·005	99·8	102·6	Severe headache, no pain in wound, which is healing rapidly.
Jan. 2.	·005	99·5	103·6	Reaction severe, and prolonged to 34 hours. Vomiting, chilliness, headache.
„ 4.	·005	99	104	Again severe and prolonged reaction with vomiting.
„ 8.	·005	98	104·8	Much sharper rise in temperature, reaction less severe and prolonged. Wound is now healed, and all thickening around end of femur has disappeared.
„ 10	·005	98·5	99·4	
„ 12.	·007	97·4	104·8	Very rapid rise of temperature with vomiting and repeated shivering.
„ 14.	·007	97·2	101	
„ 16.	·01	97·2	102·2	No malaise or local change.
„ 18.	·01	97	99	„ „
„ 20.	·01	97·4	99	No malaise, but has had sharp pain in right side of chest for which no explanation is forthcoming. The injections are now stopped, the patient's temperature is normal, and the local condition is perfectly sound.

Case 8.—*Tubercular Disease of Ankle Joint.*

Male, aged 28. The disease commenced seven months ago, when the ankle was noticed to be rather stiff and painful. Despite fixation of the joint in plaster of Paris, the use of crutches, and the administration of cod liver oil and iodide of iron, the disease steadily increased up to the date of admission, viz., December 27th. The patient's previous health had been good, and there was no family history of tuberculosis. When admitted there was marked swelling on all sides of the ankle joint, rather more noticeable on the outer side than elsewhere, the foot was extended and rigid, whilst movement of any kind was very painful. The swelling was elastic but nowhere fluctuating. Accurate comparative measurements of the ankle joints being difficult, a plaster cast of the affected part was made. There was no evidence of any other tubercular lesion.

The first injection of ·003 was made on Dec. 31st, and subsequently on alternate days, the amount steadily increasing until on January 20th ·04 was reached; four-day intervals were then adopted, and on the 24th ·05 was injected. The constitutional disturbance throughout has been extremely mild; occasional headache and chilliness with elevation of temperature only exceeding 101° on one occasion, when after injection of ·03 the temperature reached 102°. The local reaction has also been moderate, and has consisted in increased heat, swelling, pain, and tenderness.

Comparing the condition of the joint with its state on admission, as shewn by the cast, there is distinctly less swelling, the foot is in better position, and movement can be made with less pain. Though this much may be said, it must be stated that the change is not so great as that noticed in other conditions, as for instance in tubercular glands and in lupus, and a significant fact is that the patient has lost 6 lbs. in weight, which can be hardly accounted for by the moderate fever he has suffered.

Case 9.—*Tubercular Glands in Neck.*

Male, aged 17. There was a history of enlargement of these glands for some four years, and one of them, having recently suppurated, was opened in the out-patient room. When admitted, the puncture was still discharging a little pus. Behind this there was another fluctuating spot, but the rest of the glands affected were quite firm. There was no evidence of any other tubercular lesion.

On Dec. 29th the first injection of ·002 was given. The amount was steadily increased until, on the 24th Jan., ·035 was given with practically no constitutional reaction and but slight local. At the earlier injection, until ·015 was reached, there was considerable general and local reaction; subsequently, very little of either.

On Jan. 10th, the old puncture having healed some days before, there was a small collection of pus at this point, which was evacuated. No tubercle bacilli could be found in it.

At the present time there is no discharge, and there has been a most remarkable shrinking of the affected glands, certainly to less than half their former size.

Case 10.—*Lupus of Face.*

Male, aged 12. The disease began ten years ago, and had been treated by erasion and actual cautery fifteen times. On admission, the lupus involved the right cheek, the nose, and the upper lip; there was an enlarged gland over the right parotid and several in the sub-mental region; there were slight physical signs at the right apex, which gave rise to suspicion of phthisis there.

Injections were commenced on Dec. 27th, and were repeated on alternate days until January 16th, and subsequently every fourth day. The first injection was ·001. The amount was steadily increased until, on January 24th, ·04 was administered.

The constitutional reaction, though at times sharp, was never such as to cause anxiety, and at the last injection was very slight. The local reaction has been well marked, and there has been great improvement in the diseased area; this is especially so on the cheek and nose. On the upper lip there are two raised rather mammillated patches, which at present undergo little change. No very distinct nodules can be felt in them, but I am unable to say positively whether or no they still contain lupus tissue which is undestroyed. There has been some cough with grey expectoration during the course of the treatment, but no tubercle bacilli have been found.

Case 11.—*Lupus of Face.*

Male, aged 23. This man had suffered from lupus for about five years, and during that time the disease had been treated by scraping, actual cautery, excision, and by acid nitrate of mercury, in all about ten times. The disease had however constantly recurred, and for twelve months, in despair, the patient had not applied for treatment.

When admitted on January 13th the lupus involved the whole of the nose, a considerable area of the left cheek, less of the right and the left half of the upper lip; it was in parts quite warty in appearance, and in others covered with a thick scab. The patient looked thin and worn, and was suspected of having phthisis, but all that could be made out in the chest was deficient resonance at the right apex.

On Jan. 16th the patient had his first injection of ·002 which caused considerable constitutional disturbance, and swelling, redness and pain in the lupus area. On alternate days injections of ·004, 005, ·006, and ·007, were given with sharp general reaction and local change. At the present time the lupus has altered as follows:—The old scab is pushed off, exudation occurs from all the affected patches, and at several points there is active necrosis of the lupus tissue, whilst at the margin cicatrization has commenced.

Case 12.—*Tubercular Disease of Cervical and Inguinal Glands; tubercle of skin.*

Male, age 26, admitted Dec. 20th. This patient had suffered from lupus on outer side of foot, which was cured by excision about five years previously; he had also suffered amputation of the left great toe for tubercular osteitis, and on more than one occasion his glands in the neck and groin had been erased. When treatment was commenced the amount of active disease was moderate, and there was no positive evidence of tubercular disease in any of the viscera, though the lungs did not expand well.

On Dec. 29th ·002 was injected, and there was a rather delayed reaction to 102·2°; on alternate days injections were made, steadily increasing in amount until on January 14th ·015 was given; subsequently the injections were made every four days, until on January 22nd ·03 was given. The second and third reactions, ·005 being given each time, were severe, temperature nearly 105, vomiting, shivering, and headache, subsequently there was much less disturbance, and to the last injection of ·03 the temperature rose to only 101·2, with only slight malaise.

The local conditions underwent the usual changes, swelling, redness, and later on increased discharge, and an old sinus on the foot broke open but soon healed again. After the earlier injections a troublesome cough with some greyish expectoration came on, but no tubercle bacilli could be found in the expectoration. It can be positively asserted that all the local tubercular lesions are much improved, and that some of the foci have healed.

CASES UNDER THE CARE OF DR. SIMON.

Case 13.—*Lupus of Cheek; six injections; complete cure.*

H. S., aged 29, admitted January 3rd, 1891, suffering from a patch of lupus on his right cheek, which had existed for twenty-four years. Patient was a fairly healthy man. His father died of phthisis, and a sister suffered from lupus of her right cheek. The patch of lupus was oval in shape, and measured 2¾ inches vertically and 1¾ inches transversely. It had increased in size of late. It was slightly nodular, but not distinctly indurated. It had never been scraped, but, short of this, every other remedy had been tried. The first injection was given on January 5th; summary as follows.

Date.	Dose.	Temp. before Injection.	Maxim. during reaction.	No. of hrs. over 100°F.	Remarks.
Jan. 5.	·003	97·6	98·4	0	Slight headache. Lupus inflamed, throbbing and burning sensation in it.
" 6.	·005	98	101	5	Patch measured 3½ by 3 ins., was œdematous and bathed in seropurulent discharge. Some abdominal pain. No vomiting. Local reaction continues well marked.
" 8.	·008	98	99	0	Slight headache. Well marked local reaction; some smarting pain and some glandular enlargement below jaw.
					Rather severe abdominal pain on the 9th. Suppuration of lupus tissue.
" 12.	·010	97	102·4	13	Headache and nausea. Lupus tissue very swollen, œdematous and bathed in creamy discharge.
					On 15th edges much softer.
" 16.	·010	97·2	101	6	Cicatrization commencing. Less general and local disturbance.
" 18.	·015	97	102	5	Same. Sore cicatrizing rapidly.
" 23.	·010	97	99	4	Sore has now healed with soft healthy skin except over a narrow vertical strip about ¼ inch wide.

Jan. 28th. The lupus tissue has been healed over completely for two days, and, with the exception of one or two small nodules to be felt about the centre and one or two at the lower part that are yellowish as if about to break down and disappear, there is not a trace of lupus tissue to be found. A better result in a case of twenty-four years' duration could not well be imagined than what is practically a complete cure in about three weeks.

Case 14.—*Tubercular Ulcer of Cheek; six injections; great improvement.*

W. S., aged 16, admitted January 7th, 1891, suffering from lupus on the left side of the neck and cheek. Patient was a healthy lad with good heredity. Three years ago he suffered from an attack of adenitis of the left sub-maxillary glands, which left a scar; and a year or two ago lupus developed in the same situation. It had once been scraped, and now extended over a circular area of 2½ inches diameter, but was much inflamed from application of salicylic acid, and had an indurated margin. The first injection was given on January 10th, and the following is a summary of the case.

Date.	Dose.	Temp. before.	Maximum.	No. of hrs. over 100°F.	Remarks.
Jan. 10.	·005	97	102·6	14	Vomited. Lupus congested.
„ 12.	·005	99	101	4	No sickness. Surface of sore bathed in creamy exudation.
„ 13.	—	—	—	—	Infiltration less; margin paler.
„ 16.	·010	98·4	105	19	Headache and anorexia. Brownish red measle-like rash on body. Some suppurating spots on sore, and considerable swelling during reaction.
„ 18.	·010	98·4	104	11	Headache, vomiting, rash less. Epithelium beginning to cover sore; and by 22nd more than half healed.
„ 22.	·010	98·2	103	14	Some headache and vomiting. No fresh eruption. Sore skinning over rapidly & induration disappearing
„ 28.	·010.				

By the 28th the lupus patch was almost covered over, largely by sound skin. In one or two places, however, there are still small nodules to be felt, and some of these are still yellowish as if about to break down and disappear. This case is very satisfactory, and promises to be speedily cured.

PERISCOPE.

GYNÆCOLOGY AND ABDOMINAL SURGERY.

BY LAWSON TAIT, F.R.C.S. ED., AND CHRISTOPHER MARTIN, M.B., C.M., ED.

A Clinical Study of forty cases of inflammatory Disease of the Uterine Appendages.—Dr. Alfons v. Rosthorn *(Archiv für Gynækologie).*—Of the forty cases which Dr. von Rosthorn records, the youngest was 19 and the oldest 40, whilst twenty were between 23 and 25 years of age. Only eleven were married. Three-fourths were servant maids and three were prostitutes. With regard to fecundity, twelve had no children, sixteen had one child, four had two children, two had three children, whilst the others had from six to eight children each. With regard to abortions, four had aborted once and two had done so twice. In only three cases was there a clear history of puerperal fever. But on the other hand, in fourteen cases the disease began immediately after labour. In eight cases there was a clear history of gonorrhœal infection. The author believes that gonorrhœa is much more frequent than Sänger admits; and he points out that the inflammation it excites increases in severity as it approaches the peritoneal cavity (through vagina, uterus, and tube). He believes that examination of the secretions for gonococci is useless. He points out that there are mixed cases, the same patient having puerperal infection, gonorrhœa, and syphilis.

The menses were usually regular until the beginning of the attack, but after the disease was established they became irregular. In eighteen cases there was menorrhagia and severe irregular floodings, which sometimes lasted for weeks. In only one case was there amenorrhœa. In eleven cases characteristic colicky pains ushered in the period. In other cases there was a menstrual increase of the constant intermenstrual pain. In eight cases there was marked irritation of the bladder, and in nine cases irritation of the rectum. In thirteen cases there was a history of relapsing pelvic peritonitis with its consequences In five cases there was pelvic cellulitis. A slight amount of shortening and infiltration of the broad ligaments and utero-sacral ligaments was often observed. In most of the cases there was endometritis and enlargement of the uterus; but the endometritis was antecedent to the affection of the appendages. In five cases there was obstinate vomiting, and many of the cases suffered from megrim. The author remarks that the severity of the disease might generally be judged by the expression of the face.

The diagnosis was founded on (1) the clinical history, (2) the symptoms, (3) the physical signs. Pain was the most constant symptom—in no case was it absent. It was usually in the ovarian region, more rarely over the pubes. The side of the pain usually coincided with the side most diseased. There was sometimes pain shooting down the legs. In all cases was there marked sacral pain, which was relieved by rest and aggravated by exertion. The pain was often colicky, especially at the menstrual period. At other times it was described as "constant," "dull," "indefinite," "unbearable," "boring," etc., but never "throbbing." The severity of the pain usually increased with the amount of the disease, but not constantly. The amount of tenderness on pressure depended on the amount and character of the adhesions. With regard to the physical signs, in many cases it was only possible to diagnose chronic inflammation of the appendages, as it was impossible to say whether the ovary or the tube made up the diseased mass. In typical cases of tubal disease the mass was club-shaped, its abdominal end being much larger than the uterine. Sometimes constrictions could be felt in the tube. Martin says we can only positively diagnose tubal disease when we can feel a distinct thickening of the inner end of the tube. The author states that it was only after repeated abdominal sections that he acquired moderate certainty of diagnosis.

A New Method of Treating Uterine Myomata.—Rydygier (*Wiener Klin. Woch.*).—This author recommends ligation of the ovarian and uterine arteries instead of removal of the appendages. He splits the broad ligament, and ties the arteries; the round ligament is also included in a ligature. In one case in which this operation was performed the tumour was reduced to a fourth of its former size within four months.

Dermoid Cyst of the Pelvic Connective Tissue removed by Perineal Section (Sänger, Leipsig).—In January, 1888, a woman came to Sänger's clinic complaining of pelvic pain. On vaginal examination there was found a smooth, tensely elastic tumour, slightly movable, about the size of a child's head, and situated chiefly in the right half of the pelvis. The uterus was pushed upwards, forwards, and to the left by the growth. Rectal examination shewed that the tumour was behind the rectum, which was pushed to the left. On January 20th the tumour was aspirated, and about 400 c. c.m. of fluid removed. This was thick, resembled café au lait, and contained squamous epithelium, fat cells, and cholesterine plates. The patient had no bad symptoms and left the hospital. The diagnosis was "dermoid cyst of the cavum pelvis subperitoneale." She was readmitted in October, 1888, the tumour being larger and more tense than in January, and it was decided to remove it by perineal section. An incision was made about 8 c.m. long, extending from the right labium backwards to a point 2 c.m. behind the anus, and opening the ischio-rectal fossa. The levator ani, which had been displaced backwards, was carefully divided. The pelvic fascia was next incised, and the yellowish gray wall of the cyst exposed. Enucleation was at first easy, but higher up the adhesions to the bowel and connective tissue of the pelvis were so dense that the cyst burst during the manipulations. The collapsed cyst was secured with forceps, and the remaining adhesions to the rectum to the pelvic wall, and to the peritoneum of Douglas' pouch were broken up with the finger, and the cyst removed. The cavity was filled with iodoform gauze (30 per cent.), and the wound lessened in size by some deep sutures. The patient made a satisfactory recovery, and at the end of three weeks left the hospital.

Leaving out four cases, reported by American surgeons, of abscess or fistulous-formation in this region attended by a discharge of hair, Sänger has found ten other cases recorded. Only once was the cyst found upon the right side (as in this case). The cyst always displaces the rectum and vagina to the other side. The broad ligament is never unfolded, it and the uterus being raised together. The tumour as it developes approaches the perineum. The cyst is usually round or oval, with, in some cases, lateral protrusions into the neighbouring tissues. It is usually a simple cyst with thin walls ; but in one case it consisted of three lobes, and in another of two lobes. In three cases hair was found, but bone was found only in one instance. The development is slow and takes place during mature life—the youngest patient being 28 years old.

Sänger believes that the dermoids reported as appearing in the rectum, bladder, and uterus are not primary, but that they originate in the ovaries or in the pelvic connective tissue, and extend secondarily to these organs. In his paper he describes some very interesting cases in support of his opinion. Sänger perfected the operation by experiments on the cadaver, and found he could easily reach the pelvic cavity through a vertical incision three inches in length, beginning just behind either labium and extending downwards midway between the anus and the tubeischii, the levator ani being then divided. Subperitoneal tumours, hæmatomata, and exudates could be reached in this way without difficulty. This operation should be distinguished from that proposed by Zuckerkandl for the extirpation of the cancerous uterus. Sänger performed Zuckerkandl's operation six times on the cadaver, but found it so difficult that he did not think it would ever become popular. Hegar had proposed opening Douglas' pouch through an incision extending from the tubeischii to the tip of the coccyx. Hegar has successfully exsected the sacrum in order to reach Douglas' pouch to remove diseased tubes, and to open pelvic abscesses. The wound healed well, and there was perfect drainage.

Hydrastinine in Uterine Hæmorrhage.—Dr. Edmund Falk suggests hydrastinine as a remedy in the treatment of uterine hæmorrhages, as being much more prompt and sustained in its action than ergotine. Hydrastis canadensis has been used medicinally in America for a long time. Its active principle, hydrastin, consists of white prismatic crystals somewhat resembling strychnine in appearance. It can be broken up into hydrastinine and an organic acid. Dr. Falk used a 10 per cent. solution of the hydrochlorate, and found that it acted as a cardiac stimulant and produced strong contractions of the small blood vessels and also of the uterine muscle. These features led him to employ it in diseases in which uterine hæmorrhage was a prominent symptom. The solution was injected hypodermically, and caused no noticeable irritation. The patients were unanimous as to the comparative painlessness of the administrations and the freedom from that subsequent discomfort which so often arises from the use of ergotine. Dr. Falk found it most useful in cases of hyperplastic endometritis and congestive dysmenorrhœa. It is somewhat less reliable in cases of myoma and chronic metritis. It should be administered before the expected flow in doses of three-quarters of a grain to a grain and a half. Two injections of three-quarters of a grain may be given weekly, in the case of myomata, until the week preceding menstruation, when they should be given daily. During the flow the dose should be increased to a grain and a half.

A Year's Observation of Apostoli's Method of Treating Uterine Myomata.—Nagel, Gusserow's Policlinic, Berlin *(Archiv für Gynækologie).*—Nagel, after very careful trial of this method, has come to the following conclusions :—1. The electrical treatment of myoma is purely symptomatic. 2. The constant current is able to remove the pain, especially if the latter is due to a circumscribed peritonitis. 3. With the improvement in the chronic peritonitis the growth sometimes becomes more movable, and the tension of the abdominal wall lessens. 4. We are sometimes able to lessen the hæmorrhage, but this is rarely permanent, and need only be expected when the whole extent of the uterine surface is treated. 5. The removal of the pain and the diminution of the hæmorrhage, as well as the favourable effect of the current upon the activity of the bowel, often improves the general condition of the patient. 6. But never, in spite of the most careful and repeated examination—sometimes made under an anæsthetic—has he found the slightest diminution in the actual size of the myoma itself.

Codeine in Ovarian Pain.—Freund, of Strassburg, has recently used codeine in a large number of cases of abdominal pain, in order to test Lauder Brunton's assertion that the drug was of special service in intestinal and pelvic pain. His results seem to indicate that Brunton's views are exaggerated. Pain from acute uterine affections and dysmenorrhea was not so quickly relieved with codeine as with morphia, and the relief was of shorter duration. In pain from pelvic exudates and tubal disease the drug was also of but little value. In ovarian pain, however, whether from prolapse, oöphoritis, perioöphoritis, or neuralgia, the relief afforded by codeine was prompt, unmistakable, and more or less permanent, even when small doses were given. The amount usually administered was half a grain thrice daily in pill form, and in but few cases was it necessary to increase this quantity. His experience coincides with Brunton's that no disagreeable or harmful effects follow the use of the drug. It does not stupefy, diminish the appetite, or constipate. He prescribes the pill for one month after an attack of ovarian pain, and warmly recommends the drug for the above conditions.

Subcutaneous Omphalo-Mesenteric Cyst of the Umbilicus.—Reported by Dr. Zumwinkel.—The patient, a girl of 7, had from birth a small opening to the left of the umbilicus, which discharged a mucous secretion. Through this opening a probe could be passed into a cyst cavity, and moved freely about in it. It was believed to be a urachal cyst. Two elliptical incisions were made around the mass down to the fascia, and exposed the bluish cyst wall The growth was easily enucleated from a bed of connective tissue. The patient made a rapid recovery.

A piece of the cyst wall was hardened in alcohol, and microscopic sections were cut. These revealed structures peculiar to the bowel, the inner surface shewing Lieberkühns follicles and intestinal villi covered with cylindrical epithelium.

Removal of a Puerperal Septic Myomatous Uterus.—Dr. C. Stahl, Frankfort.—The patient, a primipara, æt. 35, suffering from myoma of the uterus, was confined on the 12th of March. When the placenta came away the membranes were retained, being torn from the whole margin of the placenta. No attempt was made to remove them. On March 19th the patient had a severe rigor, the temperature rose to 41° C., vomiting set in and became frequent, and the patient had a restless night. After this she became rapidly worse, and some of the myomatous masses became markedly softer. It was then decided to perform hysterectomy. The uterus, with the multiple growths upon it, was delivered through the wound, and all above the internal os removed. The stump was secured with a serre nœud in the lower angle of the wound. Kallenbach's mixture of salicylic acid and tannin was powdered over the stump. On the 4th of May the wound had healed, and on the 29th of May the patient left the hospital.

The Treatment of Pelvic Abscess.—Wiedow *(Archiv für Gynækologie)* says it is easier to detect fluctuation in extra than in intra-peritoneal suppuration. Exploratory puncture is dangerous; it is safer to rely upon the general symptoms of suppuration. If the abscess lie just beneath the skin, it should be opened thoroughly and drained; while if it is deep within the pelvis, a counter opening should be made. To reach deep-seated abscesses it may be necessary to resect the sacrum, to open up the ischio-rectal fossa, divide the levator ani muscle, and split the pelvic fascia (Hegar's method), or to follow the plan suggested by Zuckerkandl. If the peritoneum is healthy and can be pushed upwards, it may be advisable to reach the abscess by an incision parallel with Poupart's ligament. It is useless to try to close abscesses with fistulous tracts except by attacking the focus directly and draining the sac in some other direction.

A Case of Abdominal Pregnancy.—Riedinger (*Wiener Klin. Woch.*).—The patient was a multipara, aged 33 years, who came under observation 279 days after the cessation of menstruation, when fœtal movements had ceased. The patient had intermittent hæmorrhages. Examination disclosed an abdominal tumour extending four fingers breadth above the umbilicus obliquely towards the left. Palpation shewed fluid in which was a hard body. A placental souffle was heard. On vaginal examination the os admitted one finger; the uterus was 3⅓ inches long, not clearly defined, but losing itself in a tumour in the left parametrium. Abdominal section was performed, and a tumour adherent extensively to the mesentery and intestines was found, from which two quarts of brownish fluid were aspirated, and which contained a dead male fœtus at term. An attempt to remove the placenta caused so great a hæmorrhage that it was left with the fœtal sac. A portion of the sac adherent to the mesentery was ligated at the lower border of the wound and removed. The sac was stitched to the edges of the wound and filled with iodoform gauze. The rapid contraction of the sac forced the placenta to the edge of the cavity, and three weeks after the operation half of it was cut off with scissors, the remainder following a week later. The patient made a complete recovery. The pregnancy was thought to have been tubal at first, and to have ruptured at three months, becoming then abdominal.

CHILDREN'S DISEASES.

BY ANNIE E. CLARK, M.D.

Aprosexia in Children.—By Ernest A. Shaw, M.B. Cantab. (*Pract.*, July, 1890, p. 3.) Mr. Shaw was struck in the aural out-patient departments of several large hospitals, at the frequency with which the mothers on bringing children for deafness stated that, with the onset of the deafness, the children had become much duller mentally, and had retrograded in their capacity for school work to a somewhat marked degree. As the deafness in many of the cases was slight, and in some unilateral, he was impelled to the conclusion that it was insufficient to account for the mental change. He found that, in these cases, there was almost invariably an overgrowth of the lymphoid tissue of the pharyngeal tonsil and around the orifice of the Eustachian tube, and on removal or scarification of these overgrowths the improvement in the mental capacity of the children was far in excess of the improvement in hearing.

The intimate connexion between the lymphatics of the frontal region of the brain and the naso-pharynx has been demonstrated by Axel Key and Retzius, and, taking this into consideration, Mr. Shaw thinks we may assume that the hypertrophy of the naso-pharyngeal lymph tissue causes an obstruction in the flow of lymph, preventing the escape of waste tissue products from the fore-brain and thus interfering with its proper nutrition: the resulting malnutrition expressing itself in this condition of Aprosexia (Greek for heedlessness). This term was revived by Professor Guye, of Amsterdam, to express this condition, he having been one of the first to draw attention to this particular class of case.

On Urticaria in Infancy and Childhood.—By T. Colcott Fox, M.B. Lond. (*Brit. Jour. of Dermat.*, May and June, 1890).—Dr. Fox considers that, whilst ordinary urticaria, as seen in adults, is rare in childhood and almost unknown in infancy, yet urticaria is one of the most common affections of young life, taking on a special form in which the wheals have their centres occupied by an inflammatory lesion, which is left behind when the evanescent wheal subsides. This inflammatory lesion is usually papular, but may be vesicular, pustular, or bullous; and these several phases may be observed in the course of the same case. He considers that Bateman's "lichen urticatus," Hutchinson's "varicella-prurigo," the "infantile prurigo" of other English writers, and many of the papular, vesicular, and pustular rashes seen in infants should be included as phases of one disorder, viz., the "urticaria of infancy," and that the affection has a very similar etiology to urticaria in the adult, and the same principles of treatment should be carried out for it. Although he finds that this urticaria often follows vaccination, varicella, measles, and scarlatina, he does not think it has any direct relation with them, as it quite as frequently precedes them.

Therapeutics of Infancy and Childhood. VII. Diseases of the Genito-urinary Organs.—By A. Jacobi, M.D. *(Arch. of Pediat.*, June, 1890).—Dr. Jacobi regards the presence of uric acid and urates in the kidneys and bladder of the new-born infant as a source of danger, and that the speedy removal of the uric acid is of great importance, as it acts as a local irritant and may give rise to renal hæmorrhage, albuminuria, or even nephritis, and may be a ready cause of the formation of calculi, the vast majority of renal calculi and of the centres of vesicle calculi consisting of uric acid. He advises therefore that water should be freely given to the new-born.

Atropine in Eneuresis.—By William Perry Watson, M.D. *(Arch. of Pediat.*, October, 1889). The Value of Atropia in Eneuresis. By R. Bruce James, M.D. *(Arch. of Pediat.*, Sept., 1890).—Dr. Watson was led to try atropine in these cases from the paper read by Dr. Simon Baruch in December, 1888, before the Pediatric Section of the New York Academy of Medicine, in which Dr. Baruch spoke highly of the efficacy of atropine in eneuresis. Dr. Watson used the following formula,

℞ Atropiæ sulph. gr. i.
Aq. dist. ... ℥ i. M.

giving one drop of the solution for each year of life of the child at four and seven o'clock in the evening. Of the thirty cases in which he gave it, the dose had to be doubled in thirteen before a successful result was obtained. Of the cases nine were girls and twenty-one boys. Of the girls eight were cured and one improved; of the boys fifteen were cured and six improved. The improvement in most cases meant that the diurnal eneuresis ceased, and the nocturnal became intermittent instead of constant. In a few cases Dr. Watson distinctly says that the cure was permanent although the atropine was discontinued, but in others it is not stated whether the atropine had been discontinued when the cure was reported.

Dr. Bruce gives a less favourable report of the use of atropine. He gave it in a solution in which one teaspoonful contained one-hundredth of a grain of the sulphate of atropia, and gave it at six and nine p.m., increasing by one teaspoonful a night until a controlling dose was reached. This he found in no case to be less than four hundredths, and in one case as much as one-tenth was given without any symptom of poisoning. Of the fifteen cases in which he gave it he found that in all but one the eneuresis returned sooner or later after the atropine was discontinued, but it could be again controlled by returning to the original dose of atropine. In no case did the children appear to suffer from the prolonged use of the atropine, nor was it ever necessary to increase the dose from that which first proved to be the controlling dose in that particular case. Dr. Bruce therefore looks upon atropine as of service in almost invariably controlling eneuresis whilst the child is under its influence, but believes permanent cure will only rarely result from its use.

REPORTS OF SOCIETIES.

Birmingham and Midland Counties Branch of the British Medical Association.

Pathological Section.

Meeting Friday, November 28th; Chairman, Mr. **Priestley Smith.**

Dr. Foxwell shewed a man, age 38, needlemaker, who first came under his care in April, 1889, with a large tumour reaching from Poupart's ligament, on the right, to the left superior iliac spine, and from one inch above to two below the umbilicus. The patient had been previously, for three months, under the care of his club doctor for "consumption." There was also chronic double otitis media, but no other mischief was detected. In December, 1889, the tumour only existed as an indistinct thickening above Poupart's ligament on the right; the patient was greatly improved and able to resume work In April, 1890, he was admitted to the Queen's Hospital with recent wasting, slight pyrexia, a thick cloud of albumen, pea-sized glands in both groins and axillæ, and signs of consolidation at both apices. At the present time he is again greatly improved in health, the lung signs are barely detectable, the albumen and pyrexia have vanished, but the glands and thickening above Poupart's ligament appear as in April. Within the last month an abscess, with impulse on coughing, has appeared in the right groin. There is no indication of vertebral caries. Dr. Foxwell considered the case to be one of general tuberculosis commencing in the great omentum.

Dr. E. N. Nason shewed a case of *Megrim with Paralysis of Third Nerve.*—G. C., age 12½, has suffered for the last five years from periodical attacks of the following nature:—An attack begins with a feeling of languor with restlessness, lasting from one to three days, and accompanied towards the end of that time by pain in the left supra-orbital region. Then suddenly sets in a period of from 12 to 24 hours of intense nausea and vomiting, associated with palor, slow, small, and irregular pulse and great prostration. The supra-orbital pain at the same time becomes agonising The pain is limited to the left supra-orbital region, and is accompanied by tenderness over the course of the left supra-orbital nerve.

There is at the same time increased lachrymation, and a discharge of watery mucus from the left nostril, great intolerance of light, prominence of left eye-ball, with some increase of tension, wrinkling of the left side of the forehead, with fibrillar twitchings. Gradually increasing paralysis of the third nerve then follows and soon becomes almost complete. The pupillary reflexes are almost abolished, the pupil remaining midway between contraction and dilatation. What reflex movement remains is the reverse of the natural, consisting in slight dilatation to light and to accommodation for near objects. There is also marked double vision. After a variable time the severer symptoms leave him almost suddenly, but the paralysis remains for some days. Lately these attacks have been more frequent, occurring every two or three weeks, and the paralysis of third nerve has become permanent, improving but little in the intervals. There is no optic neuritis or other appreciable change in either fundus, but vision especially in the left eye is much impaired. There is no family history of epilepsy or megrim or any kindred neurosis or of congenital syphilis.

Ulcerative Endocarditis.—Dr. Suckling related the history of a case of ulcerative endocarditis. The patient, a woman, aged 28, had rheumatic fever when 14 years, and again at 18 years and 24 years. Last November she had a fourth attack of rheumatism and had never been well since. She was very anæmic, cachectic, and the skin of the face, neck and chest was covered with purpuric spots. The purpura came out in crops whenever rheumatic pains occurred. The heart was a little enlarged, and a loud systolic murmur was heard at the apex and conducted round axilla. The pulmonary second sound was much accentuated. In the right iliac fossa a pulsating tumour could be felt, which appeared rigid and which was evidently aneurysmal. The splenic area was a little enlarged, and tenderness was elicited by pressure over the spleen. There were a few hæmorrhages in the left retina, and moderate fever of a remittent type. There was no albumen or blood in the urine She suffered at times from chills.

Hæmorrhage into Cortical Convolutions of Cerebrum, causing Jacksonian Epilepsy.—Mr. Marsh shewed this specimen and read notes of the case. J. D., a man æt. 52, more or less intoxicated, fell from the platform of a tramcar on to the back of his head on the evening of October 27th, 1889. He was taken to the Queen's Hospital, and on examination a small contused scalp wound, not exposing the bone, was found in the left occipital region close to the middle line. He was not detained as there were no symptoms of any intracranial lesion. The following morning, Oct. 28th, when walking up to the hospital he had a kind of fit or attack of giddiness. He was therefore kept for an hour or more in the casualty room and watched, and as there was no recurrence he was allowed to go. When he got back home he seemed very dazed, and answered all questions with an indistinct monosyllable. In the afternoon he had two or three fits (epileptiform) and became almost unconscious. The next day, Oct. 29th, he was quite unconscious and had a fit every half-hour. In the evening he was again taken to the Queen's Hospital and admitted as an in-patient. On admission he was found semi-comatose, with stertorous and rather quick breathing, with a small and quick pulse, and with pupils equal and acting to light. His conjunctiva were insensitive. There was no paresis. Soon after admission he had a fit of typical Jacksonian epilepsy, commencing with conjugate deviation of the eyes to the right, twitching of right eyelid, then head drawn to the right, twitching of right facial muscles quickly followed by spasmodic movements of right arm and leg and rest of the body. The attack lasted four minutes and afterwards there was great exhaustion, cyanosis and profuse perspiration. In the night he had 29 of these fits, about one in every 15 minutes The next morning, Oct. 30th, after a fit occurring at 8.30, he seemed much better and less comatose. His conjunctivæ were sensitive and he winced when his face was pinched. He could not swallow, and he voided his urine in the bed. He did not have another fit until midday, and again there was an interval of some hours In the evening the fits recurred more frequently, and he relapsed into a more comatose condition, his pulse, however, being quick, and respiration 25 in a minute. During the night he had two fits only, but they were of longer duration and the movements were more violent than in the previous ones. In the morning, Oct. 31st, the fits occurred every half-hour, and in the afternoon the patient became quite unconscious. In the evening he had three fits, was much worse and died at 1.30 a.m. on November 1st.

Post mortem examination.—The wound in occipital region did not penetrate through the aponeurosis. There was a contusion over the left temporal region and on the right shoulder. Neither the vault nor the base of the skull were fractured. The meningeal vessels were uninjured. The membranes were congested, especially in the occipital region. On removing them, a hæmorrhage was found in the cerebral cortex at the upper end of the superior and middle frontal convolutions, involving part of an annectant convolution parallel to the ascending frontal.

The case presented many features of interest. First as to diagnosis and treatment: The view taken was that there was a probable fracture of the base of the skull, and a small hæmorrhage on left side of cerebrum of doubtful location but near the Rolandic area, probably not middle meningeal, possibly in occipital region near site of injury. The great symptom was not one that was then definitely localised, and from experiments might have been in angular gyrus, occipital lobe, or superior temporal lobe. Without a definite diagnosis as to locality and in the almost moribund condition of the patient when admitted, Mr. Marsh decided not to trephine. The next morning the improvement certainly contra-indicated exploratory operative measures, and still further obscured a definite diagnosis. This view was shared by those of his surgical colleagues who saw the case.

Pathologically the specimen is of interest, in that a hæmorrhage into the substance of the cortex is very rare (Hughlings Jackson), especially from traumatic causes. From the history of previous cases it appears that the initial symptom is generally unconsciousness, followed by the symptoms peculiar to the locality affected.

Physiologically this case may assist to localise the cortical centre for conjugate deviation of the eyes, as it pretty closely corresponds with the area recently mapped out by Beevor and Horsley in the monkey's brain.

Excision of Elbow Joint.—Mr. J. T. J. Morrison shewed specimens obtained by excision of elbow joint, and read notes of the case. The patient was a young gentleman, aged 18, whose left elbow had been the seat of mischief for eight months before operation, no cause being assigned, though evidence of predisposition was furnished by cases of phthisis both on the father's and mother's side. Three months' residence at the seaside had failed to arrest the arthritis, and incisions had been made from time to time to drain periarticular abscesses. The patient was first seen by Mr. Morrison at the end of September last, and the operation performed on Oct. 7. The region of the elbow was then enormously swollen. Through a long wound behind there protruded a bulky mass of œdematous granulations, and the interior of the joint was disorganised and filled with pulpy granuloma. The specimens exhibited were the articular ends of humerus, radius and ulna entering into the formation of elbow and superior radio-ulnar joints. They shewed considerable erosion and exfoliation of the cartilaginous lamellæ. The result was very satisfactory, the patient making a quick recovery, regaining a serviceable pseudo-joint, with active movements of pronation and supination, as well as of flexion and extension. Mr. Morrison raised three questions for discussion :—(1) The value of formal excision as compared with so-called arthrectomy; (2) The amount of bone to be removed; and (3) The after treatment with especial reference to the best form of splint. In his opinion excision was greatly to be preferred for the elbow joint, and the bone should be removed with judicious freedom. He described the special splint used in this case; it was a modification of one originally described by Mr. Jacobson, of Guy's Hospital, and permitted of version of the hand and to-and-fro movements of the elbow without removal of apparatus.

Mr. Marsh and Mr. Jordan Lloyd concurred in the opinion that excision was the preferable operation for disorganized elbow-joint, and that the bone should be dealt with freely.

Tumour from the Uterine Mucous Membrane.—Prof. Allen exhibited microscopic specimens of a tumour from the uterine mucous membrane. The several parts of the tumour were in different stages of growth, of which the following were shewn :—(1) Simple hypertrophy of the mucous glands, (2) glandular papilloma, (3) adenoma, and (4) epitheliomatous growth of the gland cells. The tumour involved nearly the whole mucous membrane of the body of the uterus, and was of gelatinous consistency. It was of small size, and did not infiltrate the muscular walls. The patient was 53 years old. A mucous discharge from the uterus had been observed ever since the climacteric, at 50; but as this was preceded by fourteen years of unexplained sterility, it is possible that an unhealthy condition of the mucous membrane had existed for many years. Tumours of this class are said to become ultimately malignant in nearly every case; but the characters of the one exhibited would suggest that an early scraping or cauterisation would have prevented the occurrence of malignant action.

MIDLAND MEDICAL SOCIETY.

Wednesday, Dec. 10th, 1890, M. A. MESSITER, M.R.C.S, President, in the chair.

Hammer Palsy and Exhaustion Paralysis.—Dr. Suckling shewed a man aged 36, a toolmaker, who had for twelve months suffered from weakness of the right arm and leg and from inability to follow his employment. In his work he uses a little hammer, and for many years he has done as much as ten hours' work daily, the movement required being very fine and precise. His illness began with an inability to direct the strokes of the hammer and with cramp on using it. After a long walk he feels that he drags his right leg, and after talking for a time speech becomes very difficult, and he has to force the words out, the difficulty being purely motor. He has at these times pain in the left side of the head. There is no alteration in the reflexes or any signs of organic disease. He has much improved with rest, galvanism, and tonics. The occurrence of hemiplegia and aphasia after effort in a case of hammer palsy is of interest.

Tarsectomy.—Mr Jordan Lloyd shewed bones removed from the foot of a boy, nine years old, with an exaggerated talipes equino-varus. The bones consisted of the whole astragalus, anterior half of the os calcis, the cuboid and a portion of the scaphoid. The foot came into good position, and the wound healed solidly by primary union. The sole of the foot is now flat when the boy stands.

Sequestrum Removed from a Fistula in Ano.—Mr. Jordan Lloyd shewed a sequestrum, the size of half a finger, removed through a perineal section from a boy 7 years old. The patient had been sent as an ordinary case of fistula in ano, but a sinus was traced running up the side of the bowel towards the pubes, the body of which was found to be necrosed. There was no history of acute inflammation. An abscess formed gradually in the right ischio-rectal fossa, and opened about five months before coming under Mr. Lloyd's care. The patient made a good recovery.

Malignant growth removed from Colon.—Mr. Chavasse exhibited a specimen taken from a patient aged 45. Complete intestinal obstruction had existed for a fortnight previous to operation. An exploratory incision made as for inguinal colotomy revealed an annular scirrhous growth at the junction of the descending colon and sigmoid flexure. Three and a half inches of the bowel with the neoplasm were resected, the lower opening was closed and dropped back into the peritoneal cavity, and an artificial anus at the upper end. The operation lasted one hour. The patient, who was exhausted by her previous inability to take nourishment, subsequently had three copious evacuations of the contents of the bowels, each being accompanied by syncope. On the last occasion, 14 hours after operation, restoratives failed to rally. Examination shewed that the small opening left in the gut by the encroachments of the growth had become blocked by pieces of undigested apple skin, thus causing the final obstruction.

Scrivener's Palsy in the Muscles of the Neck.—Mr. M. A. Messiter shewed a man who had been in the habit of writing with a pen held in his mouth for many years. He wrote in this way a good legible hand, but latterly the muscles of his neck commenced to fail, and he has had to give up the practice.

Uterine Fibroid removed per Vaginam.—Dr. Purslow shewed the specimen taken from a patient aged 53, who was in a collapsed condition from uterine hæmorrhage. She was found to have a fibroid tumour apparently in anterior uterine wall. The hæmorrhage was arrested by plugging and ergotin, but recurred and a laminaria tent was introduced. Two days later tumour commenced to slough, and patient had severe septicæmic symptoms and purulent discharge. She was placed under an anæsthetic and the tumour removed by the vagina, the uterus being plugged after the operation. She gradually recovered.

Dermoid Cyst of Ovary.— Mr. Christopher Martin shewed this cyst, removed by Mr. Lawson Tait. It was glued to the posterior part of the uterus and interfered with delivery, so that craniotomy had to be performed in her first confinement, and premature labour when she again became pregnant. The tumour was the size of a cocoa nut, and was filled with dense masses of matted hair mixed with fatty matter.

Large Solid Tumour of Ovary —Mr. Christopher Martin also shewed a large solid tumour of ovary, removed by Mr. Lawson Tait from a lady aged 32, single. It had been many years growing. Microscopic examination shewed it to be a fibro myoma. It weighed over 9 lbs. It had no connection with the uterus. The wound healed by first intention, and patient made a good recovery.

Ovarian Cystoma ; Flaccid Cyst.—Mr. John W. Taylor shewed this specimen, removed from a young single woman who during childhood had suffered from hip joint disease. She consulted Mr. Taylor with all the signs of ascitic fluid in the abdomen. Mr. Taylor supposed the case to be tubercular peritonitis; but on opening the abdomen a large cyst of the broad ligament was found, containing ten pints of fluid. The patient made a good recovery.

Tubercular Lungs from a case of general fibroid degeneration.— Dr. Foxwell shewed this specimen.

Paper.—Dr. Eustace Hill read a paper on the chemical composition of condensed milks, and their use as food for infants.

Local Notes.

HOSPITAL REFORM ENQUIRY.

(Continued from page 64.)

The Rev. J. C. **Blissard** said that he had found great difficulty in estimating the cost of out-patient cases, but he thought it was about 1s. per head, which was the amount charged to the patients as "registration fee."

Mr. **Wood** went on to say that the scheme he proposed would free the hospitals from the overwhelming burden of out-patients, a burden which was admitted to be a great strain upon the time and nerves of the medical staff; it would enable more time and attention to be given to the remaining cases; and it would increase the subscription lists by restoring the confidence of the public in the administration of the hospitals. To the working people the advantages of the scheme were that it would enable them to claim as a right for their penny a week that which they now paid for but received as a charity. By means of the branch dispensaries it would save them a great deal of time in making long journeys to the centre of the town and in waiting at the hospitals, and it would secure for them medical attendance at their homes when necessary. To the medical profession it would mean the addition of an average of £150 a year to a large number of medical men in the outlying parts of the town, instead of their being out of pocket, as they were now, by the large growth of the hospital out-patient departments; it would give to the medical men who were appointed a status and a prestige which would be of considerable service to them; and would enable young men to build up a private practice. This had occurred over and over again in Leicester, some of the most successful medical men having commenced as medical officers to the dispensary. Then medical men would be saved the time and annoyance involved in the collection of a number of small fees.

Alderman LLOYD asked Mr. Wood if it was not a libel on the working men of Birmingham to suggest that they wished for something in return for the Hospital Saturday contributions.

Councillor BALL: Leave him to me, Alderman Lloyd.

In reply to Dr. Rickards, Mr. WOOD said that the payment to the Leicester Dispensary doctors averaged less than 1½d. per visit.

In reply to Councillor Ball, he said that he had spent the best portion of his life among working men, and he believed that he had correctly interpreted the feeling in Birmingham with regard to Hospital Saturday. He was aware that nearly 100,000 working men in Birmingham and suburbs paid to sick and friendly societies, and that a large number of these subscribed to Hospital Saturday. He was also aware that the penny a week was deducted from the wages of a large number of people, men and women, who were very poorly paid, and who did not belong to those societies. He did not propose to abolish Hospital Saturday. In Leicester they still had Hospital Saturday, and he believed that even with a large provident dispensary in existence, the working men of Birmingham would continue to support the hospitals in their special work. In addition to the Hospital Saturday contributions, sums might be voted to the hospitals out of the dispensary funds.

By the Rev. J. C. Blissard: He had taken into consideration the fact that the Queen's Hospital in losing out-patients would also lose the registration fees.

Mr. HODGES, Secretary to the Birmingham General Provident and Benevolent Institution, said the members of that institution paid for medical attendance 4s. per annum for an adult. There was a benevolent fund, to which many of the members willingly subscribed an additional penny a week; but the provident department was self-supporting, and its benefits were regarded as a right for which the members paid. He had no doubt that but for the hospitals the membership would be much larger. The medical men were paid so much per member per annum, and it was to their interest to cure their patients as quickly as possible. The payments to the doctors ranged from £60 to £100 per annum, and the medical officers were perfectly satisfied. They had no difficulty in getting doctors; in fact, some of the best men in Birmingham were on their list.

Mr. GEORGE C. FRANKLIN, F.R.C.S., Leicester, stated that he was connected with the Leicester Provident Dispensary from 1875 to 1880 In theory he entirely approved of the system, but practically there seemed to be many defects For instance, if a doctor did his work conscientiously and thoroughly, the work grew upon him until it was impossible for him to attend to it properly without the aid of an assistant. In other words, he had to do his work by deputy. With regard to the Leicester Infirmary, he thought the out-patient department was smaller in consequence of the dispensary. Many patients, medical rather than surgical, were treated at their own homes, which they preferred in many instances. In his first year he paid about 300 visits, and in the fifth 8,000 visits were paid, two colleagues assisting. The medical men in Leicester complained that there were scores of people in the dispensary who, in their judgment, could afford to pay for medical attendance in the ordinary way. As one of the staff, he had declined on one occasion to supply a list of such cases. He did not consider it to be the doctor's duty to enquire into the social condition or position of the patients. He believed there was formerly a rule to exclude publicans, but that was not enforced now There were always applicants for the vacancies on the dispensary staff, and generally the men were good men; they were obliged to be doubly qualified. The pay became remunerative inasmuch as the medical men worked it in with their other practice. There were complaints as to the large cost of the administration. Out of the 5s. yearly subscription the doctor had 1s. 9d. or thereabouts.

It had been stated that out of a population of 140,000 in Leicester, 60,000 or 70,000 were doctored by contract. He thought that any duly qualified man coming to the town to practise should, if he wished it, become a member of the dispensary staff. It would be one way of preventing so large a number of patients being "under" one doctor.

The committee adjourned pending the preparation of the draft report by the chairman.

Messrs. Burroughs, Wellcome, and Co. announce that they will be pleased to send one of their Diaries, post free, to any medical practitioner or assistant upon receipt of request. The Wallets will be supplied extra, at cost price to them, viz., 1s. 6d. each for the Morocco and 3s. each for the Russia leather Wallet.

New Books, etc., Received.

A Practical Treatise on Diseases of the Skin. By Louis A. Duhring, M.D. Third Edition. Philadelphia: J. B. Lippincott and Co.

Hygiene and Public Health. By B. Arthur Whitelegge, M.D., B.Sc. Lond., D.P.H. Camb. Cassell and Co. Limited. 1890.

Manual of Bacteriology. By Edgar M. Crookshank, M.B. Third Edition. London: H. K. Lewis. 1891.

Illustrated Lectures on Nursing and Hygiene. By R. Lawton Roberts, M.D. Lond. London: H. K. Lewis. 1890.

Antiseptics in Obstetric Nursing. By John Shaw, M.D. Lond. London: H. K. Lewis. 1890.

Railway Injuries, with special reference to those of the Back and Nervous System, in their Medico-legal and Clinical aspects. By Herbert W. Page, M.A., M.C., F.R.C.S. London: Charles Griffin and Co. 1891.

The Daughter, her Health, Education and Wedlock. By William M. Capp, M.D., Philadelphia: F. A. Davis. 1891.

Koch's Remedy in relation specially to Throat-Consumption. By Lennox Browne, F.R.C.S. Ed. London: Baillière, Tindall and Cox. 1891.

General Booth and his Critics. By H. Greenwood, M.D., LL.D. London: Howe and Co.

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THE
BIRMINGHAM MEDICAL REVIEW.
MARCH, 1891.

ORIGINAL COMMUNICATIONS.

ON HEADACHES AND OTHER RESULTS OF OCULAR STRAIN.

THE MIDDLEMORE LECTURE, 1890.

BY HENRY EALES,
SURGEON TO THE BIRMINGHAM AND MIDLAND EYE HOSPITAL.

Gentlemen,

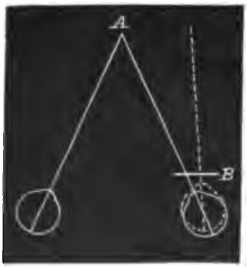
In my last lecture I dealt with some of the causes of ocular distress and consequent headache in those possessing eyes of normal focus. I explained that the consequences likely to arise from looking too long at close objects were either exhaustion and failure of the act of convergence and accommodation or spasm of the muscles concerned, and I further shewed that ill-health might lead to these troubles by reducing the capacity of the muscles for work, and how insufficiency of illumination, by necessitating a greater approximation of the object to the eyes, would increase the strain required and hasten these troubles. I finally alluded to the inevitable occurrence of presbyopia, and how this, by reducing the amount of accommodation available, was certain to lead to strain and distress and probably headache. I now wish to draw your attention to certain abnormalities which, by their nature, lead to ocular distress.

I propose, in the first place, to say a few words on some abnormalities of the external ocular muscles, which are potent sources of discomfort, and afterwards to deal with certain defects in the focal conditions of the eye itself which are equally a source of trouble.

INSUFFICIENCY OF CONVERGENCE.

One of the commonest and most distressing of the troubles arising from improper action of the external muscles is what Græfe called "Insufficiency of the Internal Recti Muscles," which is a failure of power to maintain the necessary amount of convergence required to keep both eyes fixed on a near object—a condition present more often than is generally supposed, and a frequent source of strain and headache. Persons thus afflicted can only read, or keep the eyes fixed on any near object, for a relatively short time—an hour or two, or, in bad cases, only half an hour or less—continuously, when the failure first causes the letters to appear to dance, and finally double vision supervenes, and all the words appear mixed and confused; and the efforts to prevent this, cause pain both in the eyes and head, and ultimately the work has to be given up.

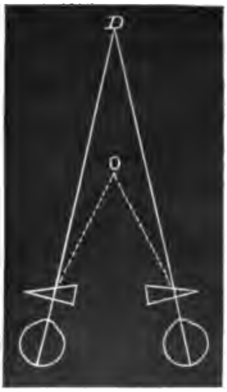
In these cases if, while the patient looks at a near object—say the point of a pen, or, better, one word of small print—one eye is suddenly excluded by putting the hand or some opaque screen before it, the excluded eye will at once, or in a few seconds, give up convergence and be seen to move outwards, though if the same test be applied to the eyes when directed in a parallel direction in looking at distant objects, no divergence will occur. The failure is therefore in the power to maintain convergence. And as this may be due to failure in the nervous centre presiding over convergence and not in



A, point looked at. *B*, screen. The dotted line shews the direction the eye takes when covered.

the muscles themselves, therefore I prefer to call this condition "Insufficiency of Convergence," and not "Insufficiency of the Internal Recti Muscles," as suggested by Græfe; as the former designation leaves open the question as to the seat of the failure.

Persons thus afflicted, often, of their own accord, find out that their troubles proceed from a too bountiful nature having supplied them with two eyes instead of one, Polyphemus-like; and so they acquire a habit of closing one eye when reading, etc., or they hold the book so much on one side that the nose cuts off one eye from seeing it, and thus enables them to diverge the eye without being troubled with double vision. In this way, they will tell you, they see more comfortably and longer. Such habits should always be considered as suggestive of something wrong, and not looked on as tricks. It is not only unkind, but *useless* to punish a child who has acquired such a habit, as is often done. He is doing his best to see with eyes whose functions are not normal. Prisms set as spectacles, with their bases inwards, will often give the necessary relief by rendering less convergence necessary. (See figure).



O is the object looked at. *D* is the point to which the eyes are directed, the rays from *O* being refracted by the prisms.

If it is borne in mind how close is the association between convergence and accommodation, already alluded to, it will readily be understood how this condition may become a potent factor in setting up spasm of accommodation, and should always be suspected in this condition; for the increased stimulus sent down from the brain centre in its endeavour to maintain convergence may easily result in too much stimulus being sent to the accommodation, which is thrown into a state of spasm. These patients sometimes obtain concave glasses to correct the short-sight thus produced, and occasionally I have seen cases in which these glasses gave some relief in reading and close work. The explanation of this is that the concave glasses necessitate more stimulus being sent to the accommodation, and so help them to maintain convergence, to which also more stimulus is now sent.

I now wish to draw your attention to a class of cases in which the *physiological position of rest*—that in which the eyes are maintained directed in a parallel condition in the same horizontal plane—is *not* present. In these cases, if one eye be covered while the other looks at a distant object, the covered eye is seen to deviate either in or out or up or down. When both eyes are free to fix upon the object, they will each be found to do so. These cases therefore differ from squint cases in that no deviation is present when both eyes are thus free to fix on the object.

It has been suggested by Stevens to name these conditions as follows :—(1) The physiological position, Orthophoria, from ὀρθος, straight, and *φορα*, a tending; (2) all others, Heterophoria.

Heterophoria he divides into (1) Exophoria, or tending out; (2) Esophoria, or tending in; (3) Hyperphoria, or tending up. In these conditions both eyes are only kept fixed on the same object by effort, which leads to strain and headache, of which they are most potent causes.

EXOPHORIA.

In this condition the eye turns out. In consequence, an effort is required to prevent this in looking at distant objects; consequently, a greater effort than usual is required to keep the eyes converged for near vision. Hence these people suffer from all the troubles we have just discussed under "Insufficiency of Convergence," and may be relieved also by prisms set with their bases *in*, as we have seen.

ESOPHORIA.

Here the deviation is inwards, hence, though it causes trouble, is not so potent a cause of distress in near vision; though even here distress and strain may arise from the strain put on the external recti to prevent too great convergence taking place. It may be relieved by prisms set with their bases *outwards*.

HYPERPHORIA.

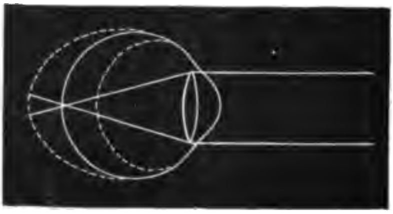
A deviation upwards, though less common, is a frequent condition. The patients suffer similar symptoms to the others, and may be relieved by a prism before the deviating eye with the base *down*, or by two prisms, the base up in one eye and down in the other. These patients often hold the head on one side, as in this way they partially compensate themselves for their defect by altering the level of the eyes. This attitude therefore, even in young ladies, must not be hastily put down to affectation.

In all these cases giddiness and double vision may occur at any time from failure to keep the eyes properly directed; and it is maintained by some that not only is it a potent cause of headache, but also the starting-point of epileptic seizures; and cases of the cure of epilepsy, or its palliation, by tenotomy of faulty muscles have been recorded. Of this I have no experience, though I have known cases in which prismatic glasses have materially reduced the frequency of attacks of migraine.

In many cases a tendency to deviate up is associated with a tendency to deviate in or out also, and it is probably a potent factor in producing these latter deviations, as it must materially increase the difficulty of keeping the eyes in the proper physiological state of direction. Probably tenotomy of the faulty muscles is the best and proper means of treating these conditions.

I will now draw your attention to certain defects in the shape of the eye which alter its focus. We have seen that the normal eye brings parallel rays to a focus on the retina; this state we call Emmetropia, (from *εμμετρὸν,* meaning in measure). Any departure from this we call Ametropia, meaning *not* in measure.

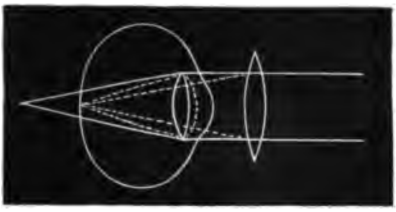
Ametropia may be of three kinds: (1) The eye may be too short; (2) the eye may be too long; (3) the curvature of the cornea may be defective. I will now deal with the two first departures from the normal, as shewn in the figure below.



If the eye is too short it is evident that parallel rays could only come to a focus at a point beyond the retina—that is, at a point beyond the normal measure. Donders therefore called this condition Hypermetropia, from over or beyond the measure. If the eye is too long, parallel rays come to a focus in front of the retina. This condition is called Myopia, from *μῦσπαγο,* to blink, in consequence of the habit people with these shortsighted eyes have of screwing up the lids, because by this means they can see better, in consequence of, by so doing, reducing the size of their diffusion circles.

HYPERMETROPIA.

This is a very common defect indeed. Let us see what the results of such a defect will be. As none but parallel rays enter the eye from distant objects, it is evident that such an eye in a state of rest would have indistinct vision of distant objects. But we have seen that the ciliary muscle can increase the refraction of the eye by increasing the convexity of the crystalline lens, so it is evident that by employing this function such an eye may obtain clear vision of distant objects; but by so doing, it already has made a draft on the amount of this function left available for seeing near objects, therefore such an eye starts with a deficit in its accommodation available for purposes of near vision.



The figure shews a Hypermetropic eye bringing parallel rays to a focus on the Retina by using its accommodation; also how same result may be obtained by a + glass placed in front of the eye.

We are accustomed to measure the amount of this defect by the strength of the glasses required to correct it. Thus, a Hypermetropia of 2 D. is one requiring a + 2 D. glass to correct the error in its focus.

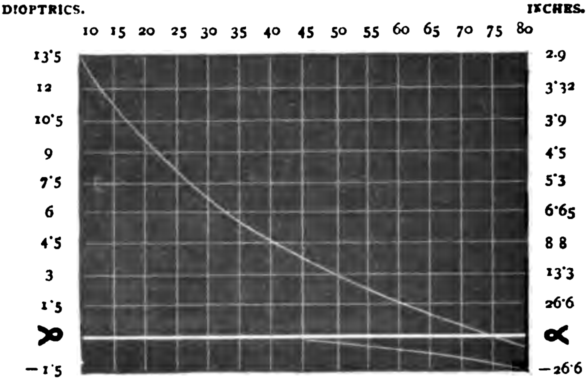
It might be supposed that if we put a glass in front of such an eye sufficient to neutralise its focal defect the accommodation would at once relax, and thus enable the eye to see without using the effort of accommodation, but this is only to a limited extent true. This function being in constant use will not completely relax; indeed in a lad, say of 20 years, *usually only* about half of the effort will relax. Thus, if such a lad have H. = 2 D., he will see clearly at a distance without a glass by using his accommodation. He will still see clearly if a + 1 D. is put in front of his eye, because he will to this extent relax his accommodation; but if a + 2 is put in front of his eye, he at once becomes dim for distant vision because he cannot relax his accommodation more than + 1 D. Consequently this glass has brought his distant focus up to the point that a normal eye would be brought by a + 1 D. glass—that is, a point 1 metre (about 3 ft. 3 in.) distant; hence, all objects beyond are now dim.

Atropine instilled into the eye completely paralyses the ciliary muscle. If atropine be put into this lad's eye, we find he can no longer see distant objects clearly because his means of bringing parallel rays to a focus is gone. We shall now find that neither will a + 1 D. enable him to see distant objects clearly; he will now require a + 2 D. to do this. Hence we say his Hypermetropia = 2 D.

We see, then, that 1 D. of this—that is, one-half—will become manifest by the use of lenses while the eye is in its natural state; this we call the Manifest Hypermetropia (Hm.). We also see that the other half = + 1 D. is concealed by tonic spasm of the ciliary muscle, and is only revealed by use of atropine; this we call the Latent Hypermetropia (Hl.), so we see the total Hypermetropia (H.) = the Hm. + Hl. More than half the H. will be latent in a younger person, and less than half in an older person, till at 40 the whole H. will probably be manifest.

Now let us try and see how this defect will affect the person who possesses it. A man at 20 years of age has about 9 D. of accommodation we shall see by reference to Donders' Diagram.

(See explanation at page 85.)



I have before stated that only half of this—that is, 4·5 D.—can be exerted continuously. If, therefore, 2 D. of this is used to see at a distance, it is evident that he only has 2·5 D. of accommodation which he can use constantly for close work. But this 2·5 D. we find, on calculation, will only enable him to see at 15·75 in. (say 16 in.) distant; and if, by reason of bad light or his work being fine, he is obliged to see nearer than this, he will suffer from strain, fatigue, and failure and headache, as we saw that commencing presbyopia would cause. He is therefore now, at 20 years of age, compelled to seek the aid of glasses to see by gaslight, or even daylight if his work is fine, as without their aid he will suffer from strain and headache. This amount we consider slight H.

Now let us take a lad with H. = 4 D., which we may consider a medium amount. A lad at 10 years of age will have 13·5 D. of accommodation (see diagram), of which only half, 6·25, can be used continuously; but 4 of this 6·25 will be required to see distant objects, so that he will only have 2·25 over for near work. But this will only bring his near point up to 17·48 in. (say 18 in.) from the eye. This lad will now therefore, even at this age, require glasses to see near objects, or otherwise he will suffer as before mentioned.

Now let us take a lad with H = 9 D. Such a lad, even at 10 years old, will only have 13·5 of accommodation, and only 6·25 (or half of this) can be used continuously.. Therefore, as he required 9 D. of accommodation to see distant objects, even this amount cannot be used continuously; and so he gives up the struggle, and contents himself with indistinct vision as the least of two evils.

This amount and greater amounts are spoken of as absolute, because no effort is made to conceal it by use of accommodation. Such lads are usually supposed to be short-sighted because they do not see distant objects clearly, and in looking at near objects they hold their book very close in order to increase the size of their retinal images; for being unable to focus the object clearly, this is the only means left them of making out small objects. As no strain is put upon their accommodation, they do not suffer the same fatigue and distress as those whose H. is less, like the two other cases given.

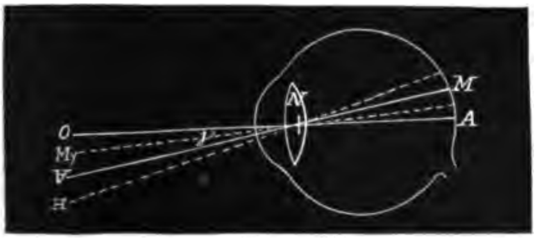
Now, it may be asked, if accommodation and convergence are closely associated, do not at any rate the first two lads use excessive convergence also, and so become afflicted with squint? In answer to this I will say the first will not, but the second probably will. The explanation of this is as follows.

I have previously stated that, though closely associated, these functions are independent; indeed it is found that usually about 3 D. of accommodation can be exerted without using any convergence; hence, as the first lad only required to use 2 D. of accommodation to correct his H., he will not squint. For similar reasons the lad with H = 4 D *will* squint, for he is called on to use more than can be employed without convergence, and hence will squint. This explains how it is that + glasses cure squint.

There are other factors in the causation of squint, but into these it is hardly within the scope of this paper to go. I will however say that any cause of imperfect acuteness of vision in one eye will be a most potent factor, rendering binocular vision less valuable, and consequently less effort is made to maintain it. The commonest cause of this is greater H. in one eye than the other, when, in consequence of the amount of accommodative effort sent to the two eyes being *precisely equal*, it follows that while the other eye is focussed properly, this eye is always under-focussed, and therefore only has an imperfect image of the object looked at, and hence becomes liable to deviate.

Further, in H. one eye is often defective in acuteness of vision, sometimes to such an extent that even large letters cannot be made out. This appears to be due to some congenital defect in the retina or optic nerve, and is not removed by the aid of glasses. Hypermetropic eyes, moreover, are smaller and more mobile than ordinary eyes, and therefore prone to deviate readily.

I have previously shewn you that the line of vision in the Emmetropic eye makes an angle with the optic axis of 5° on its inner side. Now in H. this angle is usually much larger, and so by the irony of fate these patients, who would be better able to maintain the excessive effort of accommodation necessary to see if they converged more, are compelled to converge less than persons with normal eyes if they would avoid over convergence of their visual axes. This is also another point inducing to strabismus in H.



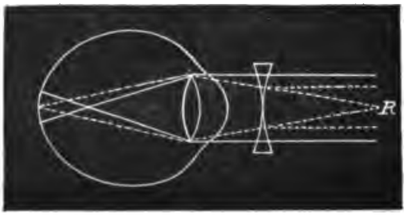
M V being the line of vision in Emmetropia, *My* in Myopia, *H* in Hypermetropia.

The statements as to accommodation (shewn on Donders' diagram) explain how it is that H., though a congenital condition, and stationary, may suddenly, as it were, begin to give trouble to any individual so affected, just as presbyopia may appear to be a sudden and new condition; the explanation and cause in each case being the same; indeed these cases in many respects resemble early presbyopia.

Thus is also explained how it is that a lad suffering from H. after an illness, which has impaired the tone of his ciliary muscle, will find a difficulty in seeing close objects, which did not before exist, and which may pass off again on recovery of strength. His trouble however will return for good at the age at which his H. has foredoomed him to a permanent inability to see near objects continuously without the aid of glasses.

MYOPIA.

Now let me direct your attention to Myopia. In this state the eye is too long, and consequently parallel rays come to focus in front of the retina; in other words, all distant objects are indistinct because the rays coming from them are not brought to a focus on the retina. It is evident that such an eye in a state of rest must be focussed for some point between the eye and infinity.



The accompanying figure shews how parallel rays from distant objects meet in front of the retina; and assuming that the rays from a near point, *R*, undergo refraction at the same definite angle in passing through the crystalline lens, how their point of meeting must be further back ***on the retina if emitted from an object placed at a definite near point*** (see dotted lines). It also shews how a concave glass placed in front of such an eye will so refract parallel rays that they enter the eye in the same direction as if emitted from the point *R*.

We measure the amount of Myopia by the concave glass required to so diverge the parallel rays coming from distant objects that they appear to come from the near point for which such an eye is focussed. Thus if this glass is a — 2 D. we say we have a myopia = 2 D., such an eye having its farthest point of distinct vision ½ metre (that is 19·69, say 20 in.) distant.

We may ascertain the amount of the Myopia in any case by ascertaining the furthest point to which small objects, such as ordinary print, can be seen clearly; but as in looking at near objects patients are apt to use their accommodation and so bring the focus nearer than in a state of rest, it is better to ascertain the Myopia by means of glasses while looking at distant objects, as otherwise, the accommodation being used, the amount will appear greater than it really is. For the same reason the measure of the Myopia is the weakest concave glasses that give clear vision for distant objects, because it is obvious that if a stronger glass is used, the patient may still see clearly, though no better, because he can use his accommodation to neutralise the effects of the glass.

Now, it may be said, surely if a person is myopic, and his eye therefore focussed without any accommodative effort for near objects, or in any case with less of this effort than is required by an Emmetropic person, he will at any rate not suffer from any ocular strain on looking at near objects; therefore, why is this condition alluded to in connection with headaches from ocular strain? especially as neither can he make any effort which will enable him to see distant objects, therefore no strain can trouble his eyes whether he looks at distant or near objects. Surely the worst that can happen to him is that he is unable to see distant objects, while he is in a measure compensated for this by seeing near objects without strain.

This is the popular view and, like most popular views, is erroneous, and founded on overlooking the fact that man is inconvenienced, if one might say so, by having two eyes and not one. Let me explain. I have previously shewn that an effort of convergence must be made when looking at near objects; I have also shewn that this effort can only within certain limits be made without accommodation.

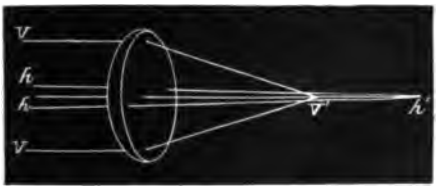
Let us suppose a person has a Myopia of 2 D. With this he can see near objects at 19·69 in. (say 20 in.) without any accommodation being required. It is found that convergence of 2 or even 3 metre angles may be made without accommodation, therefore such a man can see to read without any inconvenience arising. But suppose he has a Myopia of 4 D., then he sees without any accommodation objects at 9·84 in. (say 10 in.); but he now has to make 4 metre angles of convergence without using any accommodation, and this he is unable to do, therefore he suffers from insufficiency of convergence with all the troubles it entails, and so suffers from headache and ocular distress, which will at once be removed by wearing — glasses to read in, which, by compelling him to use his accommodation, enables him also to properly maintain convergence. If his Myopia = 8 D., then his eyes will be focussed, without accommodation, for 4·92 in. (say 5 in.); but to see at this close distance with both eyes he must make 8 metre angles of convergence without using any accommodation, which he is quite unable to do, and so he gives up the struggle and only uses one eye in reading; now therefore he suffers no sense of strain, but he now suffers from headache from ocular congestion, caused by poring so closely over his work. This is the more likely to occur from myopic eyes having an inherent tendency to congestive conditions. He must therefore also seek glasses to obtain relief.

Now I have shewn you that the angle made by the line of vision with the optic axis is greater in H. than in Emmetropia. It is found to be less in Myopia than in Emmetropia (see fig. p. 139), and, indeed, sometimes it actually cuts the optic axis on the outer side, when an apparent convergent strabismus is present from convergence of the optic axes, though the visual axes remain parallel. Hence it follows that these very people who suffer from inability to maintain convergence, by a singular perversity of nature, are the very ones called on, from this fact in Myopia, to make excessive convergence to see near objects. When to this is added the fact that the Myopic eye is larger than the Emmetropic or the H. eye, and its movements consequently interfered with, and that therefore more muscular action is required to converge such eyes, and, further, that this necessary effort is still more increased by a tendency of Myopic eyes to be placed further apart, it will be readily understood how many Myopes suffer discomfort from inability to maintain convergence. It is common to see cases in which this effort is so faulty that it is necessary to combine with their concave glasses prisms with their bases inwards (towards the nose), in order to assist them to avert the strain resulting from this loss of function, though in many cases concave glasses do all that is necessary; for, on the one hand, they carry their far-point to extreme distance, and so enable them to see at the usual distance (say 18 in.), at which only 2 metre angles of convergence are required, while at the same time, by necessitating a use of accommodation to see even at this distance, they enable a greater effort of the associated convergence to be made, and so remove their trouble. Just as we have seen that

H. leads to early Presbyopia, if I may say so, so for similar reasons myopia leads to a late onset of presbyopia, or, if the myopia = 4·5 or more, to no trouble from this cause, though there is the same loss of accommodation in these eyes as others, with increasing years, from increasing hardening of the lens.

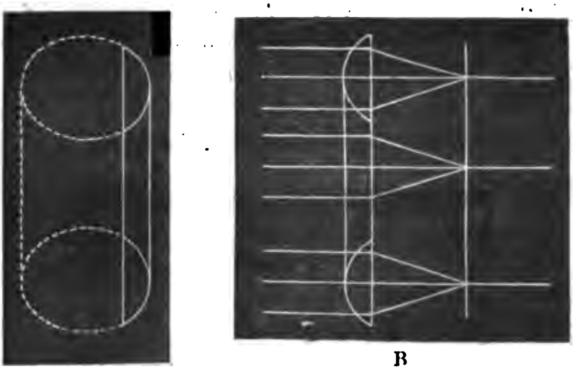
ASTIGMATISM. (*a*, without; *στιγμα*, a point).

This is due to faulty curvature of the cornea, which is part of an ellipse instead of a sphere, consequently its curvature is greater in some meridians than in others; generally greatest in the vertical meridian. As a consequence, the focal conditions are not the same in all meridians, but rays passing through one meridian come to a focus at a different point to those passing through other meridians. Such an eye has no one point to which all rays come to a focus; hence the name.



The accompanying figure shews this. The rays *V* entering in the vertical meridian coming to a focus at *V'*, a point much nearer than *h'*, at which the rays *h h* entering the eye in the horizontal meridian meet.

This defect, which is very common, prevents clear images being formed either of far or near objects, and hence is the most embarrassing of all defects of focus, and causes trouble by necessitating the patient bringing his object too near his eyes in an endeavour to somewhat compensate himself for his defective vision by obtaining larger retinal images. Hence such persons are sometimes supposed to be Myopic. Here then is a potent cause of ocular strain. This defect, being due to a faulty cornea, may and often does complicate both H. and Myopia, and when present should be corrected, as it greatly adds to the trouble arising in either condition—first, by necessitating a closer approximation of the object; secondly, by necessitating a constant change of accommodation, to focus clearly first one meridian of the picture, then another. And this is the more fatiguing, probably, because these changes in accommodation have to be made without any change of convergence. If a patient with this defect looks at a circle with lines radiating from the centre like spokes of a wheel, one will look blacker and clearer than the rest, and this line will correspond to his defective meridian. Our means of correcting this is by what are called cylindrical glasses, which refract the rays passing through them only in the meridian of their curvature.



A

B

The accompanying figure A will shew how the lenses are segments of a cylinder, hence their name; while B shews how the rays of light are refracted as above stated only.

In all these conditions leading to distress of the ocular function and probably headache, the patient finds he can read for a short time, and then fatigue sets in, and the book has to be put down, but after a few moments rest he can commence again. He frequently is seen to rub his eyes and start again. The conjunctiva becomes congested and irritable, and he is subject to Hordeolum, Tinea Tarsi, Tarsal Cysts, and other lid troubles, and suffers from headache.

The conjunctivitis appears to be the direct result of ocular strain. Possibly the lid troubles are partly due to congestion in them, associated with the conjunctival congestion, and partly caused by the rubbing; but it is well to bear in mind that such troubles, especially if chronic or recurrent, may be due to or aggravated by ocular strain from some cause. Hypermetropia, especially if complicated with astigmatism, and presbyopia at its onset, are specially liable to so annoy; and lotions and ointments will avail little unless the eye is relieved of its distress by means of proper glasses.

I have now dealt, though imperfectly, with the various anomalies in the functions of the external ocular muscles, which lead to strain in them, and also with the various errors of refraction and accommodation leading to strain of this function, and any of which may be a cause of headache, and which should always be suspected in cases of headache commencing over the eyes and recurring in character, and aggravated or caused by the use of the eyes in near vision, and most of which admit of relief by spectacles and proper treatment. It will be evident from the laws explained that glasses may themselves be a cause of some of these troubles if not properly suited as to focus, and also that as glasses act in a prismatic manner, so, while a *proper setting of them may relieve the convergent effort*, an *improper setting of them in relation to the pupils may be a cause of strain, by necessitating a greater convergence than normal;* while also any deviation of the centres of the glasses above or below the pupil may lead to all the troubles arising from Hyperphoria.

In conclusion, I would say a few words in explanation of a case shewn at the end of my first lecture. This was a case of Miners' Nystagmus, the peculiarity of which is that as the result of strain on the ocular muscles, they are thrown into a state of *clonic spasm*, in all other cases spasm caused by strain being of a tonic character. This condition may be compared to "writers' cramp," and seems due to the strain put upon the oblique muscles in looking upwards and to one side, as is required in a miner's occupation; though it seems probable that deficiency of illumination and the darkness of the object looked at are contributory factors, rendering fixation more difficult; for it is only seen in coal miners, and hence in this district often comes under observation. In these cases the eyes are under ordinary circumstances quiet, but any attempt to look up and out at once causes the eyes to be attacked by uncontrollable oscillation, which may be partly lateral, but usually also the globes are found in these movements to revolve incessantly around their antero-posterior axes, the movements being over 100 per minute. On giving up the attempt to look in this direction, the eyes are found in the course of a minute or so to cease their oscillations. This condition leads to giddiness (all surrounding objects seeming to "dance") and to severe headache. The only means of cure is a cessation of the occupation. The case shewn well exemplified these conditions.

As regards the diagnosis of errors of refraction, I would say that the "shadow test" or Skioscopy is a most suitable and reliable method of diagnosis, and may be readily learnt by any practitioner, all the apparatus required being a small piece of ordinary flat mirror, the size of a halfpenny, with a small hole scratched through the quicksilver, as in an ophthalmoscope, for the observer to look through, and three or four + glasses. But space does not admit of my fully stating here the phenomena observed, or entering into explanation of them.

I have now completed the task I set myself—to bring to your notice the ocular causes of headache—and though I am aware that this has been done in a somewhat crude manner, I thought it best to cover the whole field, otherwise these lectures might well have been confined to any one of the subjects concerned.

REPORTS OF CASES.

◆

CASE OF MELANOTIC SARCOMA WITH MELANURIA.

BY ROBERT SAUNDBY, M.D., F.R.C.P.

Isabella T., aged 41, was admitted on October 12th, 1889, complaining of severe pain and swelling of the abdomen, hacking cough, and loss of flesh. Duration of illness, one year.

Family history.—Her father, three brothers, and one sister had died of phthisis. Her mother died of heart disease. She had one sister alive and well.

Previous history —She could remember no previous illness except attacks of "biliousness," which were rather frequent, and jaundice when she was eighteen years of age. She was married and had one child only; no other pregnancies.

History of present illness.—For the last year she had been ailing, having first noticed a swelling in the right groin which interfered with her walking. This gradually extended across the abdomen, which became enlarged and hard. She frequently vomited mucus, froth and food, never blood, and suffered severe pain, which increased as the swelling got larger. Five months ago she took to her bed from weakness, and had remained there ever since.

Present condition.—Patient was a well-developed woman, but greatly emaciated, with some œdema of the feet and legs. Nose and adjacent part of cheeks reddened. Left eye disorganised from an old injury received in childhood. T., 97·2; P., 132; R, 30.

Alimentary system.—Appetite, very bad; teeth, defective; tongue large, white, and flabby; pain, flatulence, and vomiting an hour after food; bowels regular.

The pain in the abdomen was severe, but not localised; the tenderness was most marked on the right side. The abdomen was much distended, and the right side bulged in an asymmetrical fashion and projected greatly at the umbilicus. By percussion and palpation the liver could be made out as extending right down to Poupart's ligament on the right side, whence it curved upward to the umbilicus and towards the right to the end of the eighth rib. In the left hypochondrium was another mass, feeling like the spleen, coming forward to within an inch and a half of the left border of the other mass, but distinctly separated from it by a space in which a clear percussion note was obtained. The anterior border of this mass presented a notch. The dulness from the two masses united below the costal arch. The right flank was quite dull, and there was dulness at the base of the thorax posteriorly on the right side below the tenth rib and on the left below the upper border of the eleventh rib, but the left flank was clear.

Respiratory System.—She had a hacking cough, shortness of breath, and tightness of the chest. The lower ribs on the right side were bulged over the enlarged liver, but the dulness did not reach higher than the sixth rib. Elsewhere the percussion and breath sounds were normal.

Circulatory System.—No precordial pain or palpitation. Heart's apex was in fifth I. S. inside the nipple line; cardiac dulness commenced above in the third I. S, Sounds normal. Pulse 132, regular, small, compressible.

Urinary System.—Passed very little water, under 30, and often under 20 ounces; no frequency of micturition. Urine, sp. gr. 1020, acid, a dirty greenish brown colour which became black on exposure to air; deposited urates; a very faint haze of albumen, no sugar or blood.

Treatment.—Milk diet, a pint of beef tea, and a chop. Morphinæ sulph. gr. $\frac{1}{8}$, *sub-cute*, *si opus sit.* Ol. Ricini ℥ss. *cras mane.*

Progress of Case.—She continued to waste very perceptibly, and often suffered greatly from dyspnœa and pain referred to the epigastrium. She died of syncope on Oct. 20th at 12.50 p.m.

Post mortem examination.—External appearance. No melanotic points were seen anywhere on the skin. The left eye was disorganised. Height, 60 in.; circumference round chest (shoulders), 32 in.; circumference round abdomen at umbilicus, 31 in. Abdomen enlarged and irregular.

Thorax.—The pericardial sac contained a few ounces of clear fluid.

Heart.—6½ oz.; small, and studded over with numerous melanotic growths about the size of a split pea. The left ventricle contained some decolorised clot. A few melanotic points were seen, chiefly directly under the endocardium. The mitral valve was healthy. The aortic valves were healthy and competent. The right ventricle contained a decolorised clot extending into the auricle and pulmonary artery. There were melanotic points under the endocardium. The tricuspid valve was healthy. The pulmonary valves were healthy and competent.

Left Lung.—9½ oz. It was emphysematous round its margins. The pleura was studded all over with small melanotic points about the size of a lentil. On section, one or two melanotic points were seen in the septa. There was little or no œdema. The lung tissue was healthy. The glands at the root of the neck were enlarged and black.

The Right Lung was studded all over with small melanotic points. The inferior and anterior borders of the upper lobe were collapsed. On section, there were one or two dark points in the interlobular septa.

Abdomen.—*Liver*, 14 lbs., greatly enlarged, extending downwards to right iliac fossa. Deep notch on anterior edge of left lobe about four inches in length. The surface of the liver shewed great black and brown areas, one or two of these being raised and slightly umbilicated. Section shewed almost entire replacement of liver tissue by large melanotic growths, some large and some small. One large one was perfectly black and very soft, almost diffluent in the centre. Some of the growths were more diffuse and not so black. The liver tissue in some parts shewed a bright golden yellow colour. The surface of the liver was adherent to the abdominal wall by old adhesions. Some few ounces of fluid were found in the abdominal cavity.

Spleen.—5 oz., size normal, leathery consistence. On section, firm. There were no melanotic points in it.

Left Kidney, 5½ ounces, shewed one or two minute melanotic points on the capsule. On section the kidney substance was pale and fatty; the capsule stripped leaving a roughened surface.

The *Right Kidney* was adherent to the under surface of the right lobe of the liver by old adhesions. There were no melanotic points in its substance. A large growth (evidently of lymphatic glands) was lying on the right side of the spinal column opposite to the 10th, 11th, and 12th dorsal vertebræ. It measured 2 in. by 1½ in. The Retro-peritoneal glands were enlarged with melanotic growths.

The *Omentum* was speckled all over with small black points.

The *Small Intestine* was rather narrow, with only a few melanotic points under the serous covering. The *Large Intestine* was adherent at the splenic flexure to the left lobe of the liver. Many melanotic points were seen under the peritoneal coat.

The *Pancreas* shewed a few melanotic points on its surface.

The *Peritoneum* shewed many small black points over its surface, and especially on the under surface of the diaphragm; (none were on the upper (thoracic) surface of this muscle). In the pelvis the organs were studded with black points about the size of a pea. No growth was seen on the surface of the ovaries. The peritoneum over the uterus was free from disease, but over the vagina posteriorly it shewed black points.

Skull.—The dura mater was slightly adherent over the vertex. There were no points of growth seen externally. Internally there were some over the vertex on the left side, and several along the falx. Over the roof of the left orbit the dura mater was adherent and the bone thin.

Brain.—This shewed one or two small melanotic points over the left vertex, which extended for a slight distance into the substance of the brain. On removing the roof of the left orbit, it was found to be just perforated in one spot, but the dura mater over it was intact; the rest of the roof was very thin.

The Left Eye was shrunken and atrophied. In the back part a dark bluish mass was seen projecting to the outer side. On removal, there was found growing to the posterior and outer part of the eye a melanotic tumour about the size of a bantam's egg. On section, the black mass filled the shrunken eye and passed through the sclerotic. The optic nerve was atrophied but not affected. Its sheath was affected on one side. On microscopical section, the growth was found to consist of large pigmented epithelioid cells arranged in alveoli, a melanotic alveolar sarcoma.

Remarks.—Melanotic tumours, for the most part, originate in tissues which normally contain pigment; and there is every probability that in the present case the point of departure was the growth in the left orbit starting from the remains of the choroid.

Too little attention has been paid to the clinical history of these cases. A very good example, though a solitary one, is to be found in Frerich's "Clinical Treatise on Diseases of the Liver" (New Syd. Society, vol. ii., p. 327, Case 45); but Murchison has only a very imperfect case in which there were no hepatic symptoms during life. The rarity of the disease is shewn by the fact that this case was one seen by Murchison in Edinburgh when he was a house surgeon ("Clinical Lectures on Diseases of the Liver," 2nd edition, p. 232, Case 96).

Dr. W. Hale White (*Path. Soc. Trans.*, vol. xxxvii., p. 272) has reported a somewhat similar case under the title of Primary Melanotic Carcinoma of the Liver. He searched the body carefully for evidence of some primary growth elsewhere, without finding any, but a year previously the right eye had been removed for glaucoma; and there is a want of direct evidence that this eye was free from malignant disease, though it is clear that it was not suspected by the surgeon who removed it.

Dr. White's reasons for calling the growth carcinoma are not apparent to the reader of his paper. He does not illustrate it, but he says that it consisted of small rounded cells lying in alveoli which were often so little marked as scarcely to deserve the name. This description seems at least to be as easily applied to alveolar sarcoma as carcinoma; and if modern views of the development of the liver are to be accepted, a primary adenoid growth of the liver must be sarcomatous, that is endothelioma not epithelioma.

The symptoms of importance are (1) the uniform enlargement of the liver; (2) the absence of jaundice, or ascites, or enlargement of the spleen; (3) the presence of pain referred to the region of the stomach; and (4) the dark colour of the urine.

Of these the last is the only one which is by itself of great diagnostic significance. In this case the peculiar enlargement of the left lobe so simulated an enlarged spleen as to have deceived me. Taken together however they have considerable significance. It is however the peculiar condition of the urine to which I would draw special attention, and on which Dr. MacMunn has favoured me with the following report:—

REPORT ON URINE. RECEIVED OCTOBER 29TH, 1889.

The colour was blackish brown; sp. gr., 1·029. It was filtered to get rid of turbidity.

Von Jaksch's Reaction.—With a solution of ferric chloride it became perfectly *black*. (See ref. below.)

With sodium nitro-prusside and caustic potash it momentarily became violet, then a magnificent deep claret colour. On adding acetic acid a splendid Prussian blue colour formed. It was found that other acids produced the same effect, *e.g.*, HCl, HNO_3, H_2SO_4, etc. With sodium nitro-prusside and ammonia the colour was at first more of a dull red, which, on standing, changed to a dark dull violet; then, with acetic acid, a splendid dark greenish blue.

Other Reactions.—(*a*) Spectroscopic: No bands were seen in deep or shallow layers of the urine itself, nor when treated with the following reagents. (*b*) HNO_3 produces reddish black colouration; H_2SO_4 also reddish black, then clouding, and precipitation; acetic acid makes the fluid redder — a dull brownish red; KHO a clearer red; NaHO a darker clearer red. (*c*) Neither blood or bile nor urobilin was present.

Is Indican present?—Treated with Jaffe's test (hypochlorite of calcium and hydrochloric acid) a marked intensification of colour took place, the upper layer being blackish; but on agitation with chloroform, no indigo blue or indigo red went into the chloroform. But I thought that for this and some other reactions it would be best to remove the melanin, which was done by precipitating the urine with neutral lead acetate. The precipitate was a dirty grey colour; and on filtering it off, ***the filtrate was quite clear at first, but very soon began to get darker, the colour at first being bluish, but afterwards brownish black.*** On now applying Jaffe's test, a colouration at once took place; but it was not blue nor violet, but a kind of purplish brown; and when this fluid was examined with the spectroscope, no indigo blue could be detected, nor in the chloroform extract from it. ***The production of the dark colouration was due, then, to the oxidation of the chromogen of the melanin, i.e., melanogen, and not to indican at all.***

The filtrate reduced Fehling's solution to a slight degree. It became black with solution of ferric chloride. It gave the same reaction as the urine itself with sodium nitro-prusside and caustic alkalies, with acids after the nitro-prusside, and with caustic alkalies.

The only substances which might be confused with this melanogen and melanin are protocatechuic acid and pyrocatechin, but both were found absent. Other tests were used, and it was found that the pigment corresponded in every particular with that described by von Jaksch *(infra)*.

LITERATURE OF THE MELANINS AND MELANURIA.

First of all I may remark that quite different substances have been included under the name "Melanin," which have one attribute in common, viz., blackness. But the most important question for us is this: Is the pigment of the urine derived from that of the growth in the liver, or does the urinary melanin correspond with that which arises from the action of certain reagents, such as heat and acids on the parent of the humous substances in *normal* urine? (Udranszky.) Mörner has already, by spectro-photometric methods, proved that the uromelanin of normal urine gives quite a different curve from that which appears in the urine in cases of melanotic sarcomata ("Zeits. Physiol. Chemie," Band xi., S. 66—140); and, further, he proves that the pigment from the growth is identical with the melanin of the urine of the same patient. Von Jaksch ("Zeits. Physiol. Chemie," Band xiii., S. 385—394, 1889) has reported two cases of melanuria similar to the present,* and he concludes that the melanin is identical with the pigment (or at least with a part of it) found by Mörner in the urine, and therefore with that of the growth. Von Jaksch also found that ferric chloride gives a black reaction with such urine, and he concludes that *this is the most delicate test we possess*, giving, even in great dilution, the *black* colour.

Further, he states that in such and in similar urines the blue reaction with nitro-prusside, caustic alkalies, and subsequently acids, is due to the production of Berlin (Prussian) blue. But he maintains that this reaction does not depend on the presence of melanogen or of melanin. It is found, as it appears, in other cases; above all, in urines rich in indigo-producing substances. In this present case, however, as I have shewn above, no indican was present; and it seemed to me that the reaction was dependent on the presence of the melanogen. But whether this melanogen was the cause of the slight reduction with Fehling's solution or not is not clear. Von Jaksch only got a reduction with Nylander's reagent, which coloured the urine black.

Von Jaksch, in commenting upon the nitro-prusside reaction, says that a similar reaction for similar cases was observed by Thormählen ("Virchow's Archiv.," Bd. cviii., S. 317, 1887) in other diseases (diabetes); by Dreschfeld (*Brit. Med. Jour.*, 1887), by Krukenberg ("Maly's Jahresbericht," Bd. xiv., S. 60, 1884), and by Salkowski ("Zeits. f. Physiol. Chemie," Bd. ix.,

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* In both cases melanotic tumours were present.

S. 127, 1884). Von Jaksch found neither acetone nor diacetic acid in his cases, nor were they present in this case.

The name melanin has hitherto been used for the black pigment occurring in the eye, hair, and skin, in pathological new growths, and for the decomposition products of chromogens in the urine.

1. *The black pigment in the eye.*—Berzelius examined this ("Lehrbuch d. Chemie," 3 Aufl., 1840, Bd. ix., S. 522) and found a small quantity of iron present in it. Scherer could find no iron. Rosow found for its percentage composition $C=53{\cdot}97\%$, $H=5{\cdot}32\%$, $N=10{\cdot}12\%$, Ash $0{\cdot}6\%$. The ash contained silicic acid and traces of iron ("Archiv. f. Ophthalmologie," Bd. ix., S. 63, 1863). Sieber has also examined it recently from the pigment obtained from the eyes of oxen, and obtained the results given in the table below ("Archiv. f. exper. Patholog. u. Pharm.," Bd. xx., S. 362, 1886).

2. The pigment in the skin of the negro was examined by Floyd, but his results are not satisfactory (Jl. Chem. Soc., 1877).

3. The black pigment of the hair was examined by Sieber (loc. cit.), who found the composition given in the table. It was easily soluble in alkalies; insoluble in water, alcohol, ether, chloroform, and carbon bisulphide, and it contained no iron.

4. Heintz first examined the pigment in melanotic cancers, and found it free from iron. It was with difficulty soluble in alkalies, like the black pigment of the eye ("Archiv. f. pathol. Anat. u. Physiol. u. f. klin. Med.," Bd. i., S. 477, 1847).

Dressler then examined the same, and his results are given in the table ("Viertel Jahrschrift f. d. prakt. Heilkunde," Bd. lxxxviii., S. 9; Bd. ci., S. 59).

Lately Berdez and Nencki examined the pigment from a case where the primary cancer started in a nævus on the shoulder, but after this was extirpated, metastatic deposits formed, and after death all the organs had a brown red colour, the bulk of the disease being in the liver. The pigment from this melanosarcoma they named phymatorusin (from φυμα, cancer; and ῥουσιος, red-brown). They prepared the pigment by finely dividing the spleen and liver, and treating them with hot alcohol, then with ether. The colouring matter was then dissolved with caustic potash (1 per cent.) precipitated out of this with HCl and dried at 110° C.; again dissolved in KHO sol. and precipitated with HCl. It was then purified by further treatment, which Mörner (loc. cit.) shews must have altered it. So obtained, it was found to be insoluble in water, alcohol, and ether; easily soluble in fixed and carbonated alkalies and in ammonia; and precipitable from these solutions by HCl, but again soluble in excess of the acid. ***It was somewhat soluble in urine.*** It furnished pyridine by heating. It contained ***no*** iron ("Archiv. f. exper. Path. u Pharm., Bd. xx., S. 346, 1886).

The same authors, also Dressler (loc. cit.), examined the pigment obtained from melanotic cancers of horses, and the two former have named this substance hippomelanin. The isolated pigment was insoluble in cold caustic potash solution, and in this and in its greater resistance to melting KHO it was different from phymatorusin. It was free from iron.

Very recently Nencki and Sieber state ("Arch. f exp. Path. u. Pharm." xxiv., S. 17) that they have examined the melanin from a melanotic sarcoma of the liver and find that it is not identical with the phymatorusin found in other cases; this is also true of the melanin obtained from sarcomatous inguinal glands and the black pigment deposited in the skin in Addison's disease.

TABLE.

	C	H	N	S	Fe
	%	%	%	%	%
EYE PIGMENT.					
After Scherer	58 28	5 92	13·77	?	?
„ Schlosberger	—	—	—	—	0·25
„ Rosow	53·97	5·32	10·12	0	Traces
„ Sieber, Ox eyes	60·12	4·81	10·81	0	0
„ Pig's eyes	58·64	5·09	—	0	—
PIGMENT OF HAIR					
„ Sieber, black hair	57·19	6·97	—	2 71	0
„ black and brown hair ...	56·14	7·57	8·50	4·10	0

	C %	H %	N %	S %	Fe %
CANCER—MELANIN.					
„ Heintz	53.44	4·02	7·10	?	0
„ Dressler (1)	51·73	5·07	13·24	0	0·21
„ (2)	—	—	7·66	?	?
„ Berdez & Nencki (Phymatorusin)	53·48	4·03	10·55	10·67	0
„ „ from horses ...	53·60	3·88	10·48	2·84	0
„ „ from horses ...	55·61	3·82	10·87	2·81	0
„ Dressler, from horses	46·44	4·22	10·63	c	Traces
„ Mörner, Pigment *insoluble* in acetic acid—(*a*) from tumour ...	55·72	6·00	12·30	7·97	0·072
(*b*) from baryta precip. in urine	55·76	5·95	12·27	9·01	0·20
(*c*) from lead precip. in urine	—	—	—	8·30	0·25
Do. Pigment soluble in acetic acid					
(*a*) from tumour	—	—	—	5·90	0·21
(*b*) from baryta precipitate u.	—	—	—	—	0·19
(*c*) from lead precipitate u.	58·07	8·03	11·08	4·75	0·20

It will be seen from this table that Mörner (loc. cit.) got a pigment soluble and one insoluble in acetic acid from both tumour and urine. I may here briefly refer to his results, as he has very carefully investigated this subject. The patient, whose urine shewed the dark colouration, had a melanotic sarcoma on the shoulder with secondary growths in the liver, but none in the kidney. The blood, except for a low percentage of hæmoglobin, appeared to be normal. The pigments were investigated spectro-photometrically and by elementary analysis. It will be noted that Mörner obtained iron in his analysis—this was also estimated spectro-photometrically—the iron of the ash having been converted into thiocyanate, and its extraction coefficients compared with those from a solution of ferric chloride of known strength similarly treated. The failure of others to obtain iron is explained by the fact that hydrochloric acid was used by them to prepare the pigment, for this acid dissolves out nine-tenths of the pigment.

Baryta water was used to precipitate the pigment from the urine, and the precipitate was filtered off, each day's urine being thus treated, and the baryta precipitate kept. In the filtrate from the baryta precipitate lead acetate carries down any pigment left unprecipitated. The treatment for the isolation of the pigment from the tumour was somewhat complex, and need not be considered here. It will suffice to say that it was, like the isolated urinary pigment, a brownish amorphous powder when dry; and, obtained from either tumour or liver, was partly soluble and partly insoluble in acetic acid. Von Jaksch says that in his cases, referred to above, the pigment present corresponded to that which Mörner found insoluble in acetic acid. Whether there are really two pigments, or whether they are both derived from the same mother substance—being produced from it by the action of acids—is left undecided.

Finally, it may be remarked that Eiselt (in Prague) first shewed that urines from cases of melanotic sarcomata became black with nitric acid, and potassium bichromate and sulphuric acid, and he made many interesting observations on such cases ("Vierteljahrs. f. d. prakt. Heilk. Prag.," Bd. lxx., S. 107, 1861; Ibid, Bd. lxxvi., S. 16. Cf. also Pribram, Ibid, S. 77, 1876).

With regard to the presence of indican in such cases, to which Salkowski and Leube ("Die Lehre v. Harn.," S. 489) refer, I may refer to the negative result obtained above, which, to a certain extent, is confirmed by an observation of Miura ("Chem. Centralbl.," S. 250, 1887), who found that the injection of melanogen into animals produced no increase in the indican reaction of the urine.

Evidently we have in the black reaction with ferric chloride, which we owe to von Jaksch, a great diagnostic help in cases of melanotic sarcomata.

KOCH'S TREATMENT AT THE GENERAL HOSPITAL.

CASES REPORTED BY GILBERT BARLING, B.S., F.R.C.S.

In the February number of the *Review* appeared reports of several cases treated in the surgical wards of the General Hospital by the injection of Koch's lymph. The same cases are continued here with the numbers previously attached.

Case 7.—*Tubercular Epiphysitis of Left Femur.*

At the last report, the wound made at the time of operation had healed rapidly after six injections, but the latter were continued until twelve had been given, when there was no longer local or general reaction to ·01 gramme.

The patient has now regained the weight he had lost, the scar on the leg is quite sound, the measurements of the two limbs at the level of the diseased site are equal, and the movements of the joint are perfectly free. How much of this excellent result is due to operation and how much to the lymph it is difficult to decide, but the rapidity of healing after the injections were commenced was most satisfactory.

Case 8.—*Tubercular Disease of Ankle Joint.*

In this patient the general and local reaction after injection has throughout been mild, even when as large a dose as ·1 gramme has been reached. The very moderate improvement reported in the condition of the joint last month has been only slightly increased, but the patient's general health is better, and he has regained the weight formerly lost.

Case 9.—*Tubercular Glands in Neck.*

Since the last report, although the quantity of lymph injected has been steadily increased up to ·1 gramme, yet the general reaction has been very mild, whereas it was to the early injections severe. The shrinkage of the glands reported last month has gone steadily on, so that the mass, which when the boy was admitted was about the size of a small orange, is now reduced to two or three distinct glands about the size of the end of one's finger, and the suppurating sinus has been dry for some weeks. This is the most positively successful case in the surgical wards.

Case 10.—*Lupus of Face.*

This patient has been steadily injected until the present time, but with only slight improvement upon the condition reported last month. The patches referred to on the upper lip, although reduced in thickness, are still active, although the dose has reached to nearly a decigramme. It is therefore proposed to erase these patches and, after waiting a few days, to inject again to see if there is any local reaction.

Case 11.—*Lupus of Face.*

This patient when admitted was in a deplorable condition, with a hideous warty and scabbed area of lupus involving the whole of the nose, about half the left cheek, the left half of the upper lip, and a small portion of the right cheek.

Since the last report, the injections have been increased nearly to a decigramme, the later doses giving rise to but slight general reaction. The local change is most gratifying, the scab has entirely disappeared, the warty formation has gone except at the end of the nose, and more than two-thirds of the lupus tissue has disappeared, leaving in its place a soft red scar.

Case 12. — *Tubercular Disease of Cervical and Inguinal Glands; tubercle of skin.*

On referring to last month's number, it will be found that this patient had widely-spread slight tubercular lesions which in the early days of injection shewed improvement. After a centigramme had been reached, however, no further improvement was made, so the patches were erased, and the patient is again being injected to secure sound healing.

PERISCOPE.

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KOCH'S TREATMENT OF CONSUMPTION.

BY ROBERT SAUNDBY, M.D., F.R.C.P.,
AND GILBERT BARLING, M.B., B.S., F.R C S.

Guttmann,* Paul.—*Ueber die Anwendung des Koch'schen Mittels bei Lungen-tuberculose.*

Guttman thinks that the first dose in phthisis may be at least 3 mg. or even 5 mg. To illustrate the delicacy of the reaction he tells of a doctor who, eighteen months ago, scratched himself at an autopsy and got a *post mortem* "tubercle" on his right index finger. He injected himself recently with 3 mg. for experimental purposes, and got a strong reaction in the tubercle, with slight general fever. He recommends that the dose should not be increased so long as it is followed by reaction, but that as tolerance is acquired it may be raised to a decigramme. In the earlier stages a day's interval should elapse between the injections, but with larger doses four to five days may be allowed to intervene. For the stronger doses it is better to use a 10 per cent. solution.

There are 109 cases of phthisis in the Moabit Hospital under Koch's treatment. None have any medication or any change of diet, and all had been in the hospital a longer or shorter time before the treatment commenced. Seven were sent in by Koch himself. The oldest case has been 27 days under treatment; others three weeks, two weeks, and less.

1. The character of the sputa has improved, becoming less purulent, more mucous.

2. The quantity of the sputa has often increased, in others not. Later on it has diminished in some cases.

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* Dr. Guttmann is the director of the Moabit Hospital, where a number of beds have been assigned by the Berlin Municipality for the treatment of cases of tuberculosis under Koch's immediate supervision.

3. In about five per cent. of the cases the tubercle bacilli have disappeared, in others the number has diminished.

4. The tubercle bacilli in two cases have become altered by metamorphosis into coccus-like forms collected into little groups and enclosed in a cell contour. According to Koch this change has never been observed under other conditions, and may be regarded as peculiar to the process under consideration. The other changes, beaded and club forms, are not peculiar to injected cases.

5. The body-weight has in the minority of cases increased. As a rule it diminishes while the patient is reacting strongly, and increases as this stage is passed. Some few cases have lost weight.

6. The physical signs have improved in certain cases under Koch's treatment since October and admitted to Moabit in December. That is to say, the "number of râles has diminished and the percussion has become clearer." Guttmann's own impression is that there is hope of curing early cases; and he speaks of two young girls, sent in by Koch and treated with doses up to 1 decigramme, whose sputa contains no tubercle bacilli, and who are free from fever and in good health.

He gives the following as contra-indicating injection:—Weakness, albuminuria, heart disease; as a *temporary* contra-indication, hæmoptysis.

Israel, O.—*Nachtrag zu dem Bericht über die anatomischen Befunde an zwei mit dem Koch'schen Heilmittel-behandelten tuberculösen Localerkrankungen.—Berliner Klinische Wochenschrift*, 1891, No. 1.

In a recent paper Israel described the appearances of the parts removed from the ankle joint of a man named Spichalski, who had undergone Koch's treatment for *five weeks* and no longer *reacted to repeated injections.* In the tissues and pus several well-stained bacilli were found, and the question was, whether they were still living and capable of infection. This was tested by inoculating the anterior chamber of the eye of a rabbit with some of the matter, and at the end of 19 days a *characteristic tuberculosis of the iris* developed.

Israel, O.—*Ueber eine praktische Farbung zur histologischen tuberculöser Producte.—Berliner Klinische Wochenschrift*, 1891, No. 1.

Israel recommends hæmatoxylin for double staining sections. The plan he recommends is based on Weigert's, including neither acids nor alcohol. Instead of Weigert's anilin violet he uses hæmatoxylin blue for the nuclei; fuchsin for the bacteria, which by the use of iodine mordant is made very brilliant. He disapproves of washing in anilin water as likely to lead to diffuse staining. He recommends that the small pieces of tissue should be fixed in saturated sublimate solution and then hardened in alcohol by means of F. E. Schultze's dialyser.

The following are the steps of the staining process:—

1. Staining in Böhmer's hæmatoxylin 1-2 minutes.
2. Washing in distilled water.
3. Carbol fuchsin (Ziehl's) 3-5 minutes at ordinary temperature.
4. Ordinary Lugol's solution of iodine, 1 minute (not longer).
5. Aniline oil, perhaps afterwards aniline oil xylol (2 ; 1) till section ceases to give off colour.
6. Xylol dammar.

Liebman, Victor.—*Tubercle Bacilli in the blood of patients treated by Koch's method. Berliner Klinische Wochenschrift*, 1891, No. 4.

Liebman relates nine cases of tuberculosis, chiefly phthisis, in which he found tubercle bacilli in the blood after a considerable number of injections as a rule, though in one case after only one injection of 0·001. In a discussion at the Berlin Medical Society, Ewald, referring to this observation, stated that he had been unable to verify it, and so far it remains unconfirmed.

(Mr. Barling has found tubercle bacilli in the blood of one of his cases after injection.)

Rütimeyer, L.—*A Case of Acute Tubercular Meningitis after Koch's treatment in a case of Phthisis Pulmonalis. Berliner Klinische Wochenschrift*, 1891, No. 3.

Dr. Rütimeyer, of Basle, has recorded a case of tubercular meningitis which supervened in a man aged 33, with phthisis affecting the upper lobe of the right lung only so far as physical signs went, after nine injections extending over twelve days, the largest dose being 0·03. It is noteworthy that the treatment in this case was pushed very vigorously, the last four injections being given daily, and the quantity injected raised rapidly. The patient lost 11 lbs. in a week.

Koch's Remedy in relation specially to Throat Consumption.—By Lennox Browne, F.R.C.S. Ed. London: Baillière, Tindall and Cox. 1891.

In this little book Mr. Lennox Browne has stated pretty nearly all that is known up to the present of the effects of Koch's remedy in tuberculosis of the larynx, and has carefully considered the conditions under which it is advisable to pursue this method of treatment. He shews that great improvement of many symptoms in treating tuberculous ulcers takes place in consequence of the injections; and while exhibiting due caution on the question of liability to relapse, he expresses the opinion that, in combination with mountain climate, fresh air, and good diet, the remedy will be found to be highly advantageous. The work is profusely illustrated by drawings from actual cases under treatment, shewing the state of the larynx before and after the injections. It is an opportune publication, giving much valuable and sound information upon a subject in which the medical profession and a large section of the public are intensely interested; but it does not pretend to be a final judgment upon a method which is still in the experimental stage.

Sonnenburg *on the Drainage of Apical Cavities in conjunction with treatment by Injection of Tuberculine.*—(*Deutsche Med. Woch.*, January 1st, 1891.)

In this paper the author describes the method of operating, and gives some cases, the drainage being performed before many injections were made. To get at apical cavities, the best way is through the first intercostal space. This has been demonstrated at autopsies, which also shewed that adhesions between the wall of the cavity and the pleura generally exist as far as the second rib. The intercostal space alone does not give room enough, and it is important therefore to remember that a varying amount of the first rib is uncovered by the clavicle. An incision is made a thumb's-breadth below the clavicle and parallel with it, beginning at the manubrium and ending two fingers'-breadth from the coracoid process. After dividing the skin, platysma, and pectoralis major (just missing the edge of the deltoid), a layer of fascia and then the border of the pectoralis minor are reached. If the incision is not carried too far outwards, the sub-clavian vessels are not exposed, and the only vessels divided are branches of the anterior thoracic artery at the outer corner of the wound. The internal mammary artery, with here only one vein, lies under the costal cartilage one finger's-breadth from the edge of the sternum, and Sonnenburg only saw it on one occasion when operating on the left side. The position of the first rib and its relation to the clavicle should now be felt with the finger. Dividing then with a knife the periosteal covering of the rib and the internal intercostal muscle, these structures are separated from the bone by a raspatory, especially on the posterior surface, so as to avoid the intercostal artery. A semicircular piece of the outer margin of the first rib is now removed. The pleura being pretty freely opened, a limited incision is made into the cavity and the secretion drained away. The opening is then enlarged with Paquelin's cautery at a red heat, the deep parts of the wound are searched with a probe, and any further cavity can be opened up with the cautery. The opening thus made subsequently enlarges by the separation of the cautery slough, and, if necessary later to enlarge the opening, it is worth remembering that the lung is practically insensitive to burning though the pleura is sensitive. The wound and cavity are packed with iodoform tampons, and there is very little constitutional disturbance.

Case 1.—Male, aged 36, no hereditary history. The patient had no serious illness until 1888, when he had pain, coughing and shortness of breath, with blood-stained expectoration. The diagnosis made on admission, Nov. 17th, 1890, was phthisis, with cavity in the right upper lobe. Four injections of tuberculine were given with but small reaction.

Before operation, physical examination shewed above the second right rib distinct signs of a cavity, cracked pot sound, loud amphoric breathing, and, after coughing, large ringing râles. There was also slight disease of the left apex. Numerous tubercle bacilli were found in the sputum. One injection of tuberculine of ·005 gr. was then given with little rise of temperature and no local reaction. The operation was performed Dec. 15th, the details being as above described, and the pleura was found adherent to the lung. The cavity was punctured, and decomposing secretion let out, the opening being then enlarged with the cautery. The cavity was about the size of a filbert. The next day the tampons were soaked with sero-purulent discharge, and no air came from the cavity in deep respirations.

Dec. 18th. The patient was quite himself, and ·005 gr. of tuberculine was injected without reaction.

Dec. 19th. Injection of ·001 gr., with reaction to 100·4° F. Very little local change was noticed.

The history is related up to the 26th December, when the injections had been increased to ·015 gr., with mild constitutional reaction and no very distinct local change.

Case 2.—Male, aged 43, no hereditary history. Patient was well until 1886, when he had right pneumonia followed later by cough, pain, expectoration, and shortness of breath, with general wasting and night sweats.

When admitted, on October 3rd, he had disease of both lungs and a cavity in the right upper lobe. The patient had three injections of tuberculine early in December, with severe reaction. At the time of operation, Dec. 15th, the physical signs of a cavity on the right side in front were well marked above the second rib, and numerous tubercle bacilli were found in the sputum. The operation was carried out in the way already described, a piece of the first rib being removed; and here, again, the lung was adherent to the parietal pleura. Puncture let out but little pus, but eventually, with the cautery, a cavity the size of half a walnut, with fairly smooth walls, was reached, from which no air escaped in respiration. For a few hours blood was noticed in the sputum, but the patient suffered little depression from his operation. The next day air entered and escaped from the cavity in deep respiration.

Dec. 18th. Injection of ·0005 gr. of tuberculine without reaction; and on most of the following days injections were given until the amount reached ·015 gr. on Dec. 26th, at which date the history ceases.

There was but moderate fever, the patient seemed generally improved, and there were appearances in the cavity which resembled the local reaction seen in surface tubercular lesions.

The other cases reported are similar.

Addison's Disease.—In the *Deutsche Med. Woch.* for February 19th, Dr. Schreiber, of Königsberg, draws attention to the effect of Koch's remedy on a case of Addison's disease. The patient shewed no signs of tuberculosis in the lungs or elsewhere than the supra-renal capsules, but reacted in the most severe and alarming manner to an injection of the "smallest dose" of the remedy. In addition to the high fever, he had the most intense lumbar pain, thus answering in the affirmative the question as to the tubercular nature of disease of the supra-renals—at all events in this case.

Dr. Schreiber also details an important research upon the use of the remedy in infants. He has found that new-born children of non-tubercular parents will tolerate even larger doses than adults; and in some instances he gave, at the third or fourth injection, as much as 5 cg. without any reaction. In the case, however, of two apparently healthy boys, whose parents were tubercular, he obtained a severe reaction with prolonged fever after an injection of 1 mg.

REPORTS OF SOCIETIES.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

PATHOLOGICAL AND CLINICAL SECTION.

Friday, January 30th, 1891; Mr. **PRIESTLEY SMITH** in the Chair.

Obstetrical Paralysis.—Dr. Suckling shewed a baby suffering from paralysis of the right arm. The limb hung helpless and flaccid. It was extended and forcibly pronated. The deltoid biceps, coraco-brachialis, brachialis anticus, and supinator muscles were paralysed and wasted. The reaction of degeneration was present. No other muscles were affected. The birth of the child was difficult, there being a head presentation but considerable difficulty with the shoulders. The cause of the paralysis was injury of the 5th cervical nerve at birth.

Differential Diagnosis of Distended Gall Bladder.—Mr. John W. Taylor read a short paper on the Differential Diagnosis of Distended Gall-bladder from Tumour of the right Kidney, maintaining that difficulty arose when the distended gall-bladder rested upon a somewhat enlarged or displaced right kidney, the two organs under ordinary examination moving together and simulating a renal tumour. He pointed out that evidence of the independent movement of the gall-bladder overcame this difficulty of diagnosis, and read notes of a recent case of cholecystotomy which was illustrative of his advice regarding the differential diagnosis of these conditions.

Adherent and Calcareous Pericardium.—Dr. Foxwell brought forward a specimen of heart and lungs taken from a strumous girl of 16 who never remembered to have been free from respiratory trouble. The liver and spleen were much enlarged, had their capsules much thickened, and, with the specimens, formed a great zone of absolute dulness right across the body, with its upper limit at the fifth costochondral level (a small triangle reaching up to the junction of the fourth left cartilage with the sternum) and its lower a horizontal line one inch above the umbilicus. All the organs mentioned, as well as the kidneys, intestines, and stomach, had undergone marked fibroid change. The lower lobes of the lungs contained numerous bronchiectases, while both pleura and pericardium were dense masses of fibroid tissue with large calcareous plates embedded in them.

Dr. Foxwell exhibited the specimen chiefly for the purpose of pointing out the extreme difficulty there sometimes is in diagnosing adherent pericardium—a difficulty which, in this case, he had been unable to surmount. During life he had looked upon the condition as one primarily of lung disease with secondary dilatation of heart, inducing dilatation with regurgitation of both mitral and tricuspid orifices. As regards the valves the diagnosis was correct, as both orifices were much dilated, while no lesion of the cusps themselves was found. But in view of the immense change which the pericardium had undergone, it seems probable that its disease was as old as, if not anterior to, the disease of the lungs. In the absence of any history of an acute attack, the real origin of the condition remains obscure.

Ophthalmoplegia.—Dr. Simon shewed a patient with ophthalmoplegia externa and interna.

Twisted Ovarian Pedicle.—Mr. Lawson Tait read notes and shewed specimens of three cases of twisted ovarian pedicle of recent occurrence.

Kidneys containing Calculi.—Mr. H. Langley Browne shewed kidneys containing calculi from a case which died after lithotomy.

Perforating Ulcer of the Duodenum.—Mr. Browne also read a note of a case of perforating ulcer of the duodenum.

Tuberculosis.—Mr. Barling shewed a specimen of tuberculosis of the tarsal and ankle joints, amputated after the patient had been under treatment by injection with Koch's fluid.

MIDLAND MEDICAL SOCIETY.

Wednesday, January 14th, 1891; Mr. M. A. MESSITER, President, in the Chair.

Sub-conjunctival Dislocation of the Lens.—Mr. Wood White shewed a man who some weeks before had received a violent blow from a fist on his only eye, resulting in almost complete blindness. The iris was torn from its ciliary border for about one-third of its circumference. The vitreous was so opaque that no details of the fundus could be seen, and the lens was lying between the conjunctiva and the sclerotic near the upper and outer corneal margin.

Lupus of Palate and Larynx.—Mr. Barling shewed a patient aged 25 with lupus of these parts without the skin being affected. The disease commenced in the pharynx five years ago and then extended upwards and downwards. The condition at present is as follows:—In the oro-pharynx and on the soft palate complete cicatrization; on the hard palate ulceration involving the mucous membrane of the anterior third, the ulceration having no tendency to perforate, its area having extended but little during the last two years, and its base being covered with coarse granulations; the upper gums of the incisors and canines are red, swollen, papillary, and in places slightly ulcerated. The epiglottis is extensively destroyed, the upper margin presenting an irregularly excavated condition with some thickening, whilst the colour is for the most part a curious glistening white. Over the inter-arytenoid fold is an ill defined, somewhat warty thickening, but no ulceration can be seen. The patient is married and has one healthy child. There is no evidence of acquired or of congenital syphilis, and the administration of mercury and iodide of potassium has had no effect on the lupus. Locally lactic acid has been applied up to a strength of 75 per cent. but without effecting improvement; so it is proposed to try the effect of injecting Koch's fluid. Mr. Barling pointed out the advisability of being prepared to intubate such a case instead of doing tracheotomy should infection produce much stenosis of the larynx.

Fibroid Tumours.—Dr. Malins shewed (1) a fibroid tumour of the broad ligament, weighing 9½ oz., with microscopic sections made by Dr. Ratcliffe, establishing its structure. The patient was a widow æt. 40, multipara. The tumour was enucleated by abdominal section, the edges of the capsule being sewn to the wound. She recovered without an untoward symptom. (2) A fibroid tumour, weighing 2½ lbs., enucleated per vaginam from a woman aged 51, presenting in the anterior part of the uterus into the vagina. The tumour was delivered by midwifery forceps from the vagina, the perineum torn and stitched up again. The patient did remarkably well.

A series of Calculi removed from one patient.—Mr. Thomas shewed a number of calculi which he had removed from the same patient by four operations. The first was in Jan., 1887, when a phosphatic stone, weighing 604 gr., was removed. In the following April three small calculi, weighing 30 gr., were removed by nephro-lithotomy from the right kidney. In May, 1887, a calculus weighing 423 gr., and in December, 1890, three more, having an aggregate weight of 500 gr. The first was almost a pure phosphatic stone, but in the others were layers of uric acid. The suprapubic operation was done three times, and it was interesting to observe that the condition of the bladder was not affected by the numerous operations.

Paper.—Mr. Thomas read a paper on modifications in the treatment of club foot. The paper was illustrated by the exhibition of a number of cases, including a tarsectomy four and a half years after operation; a case in which Symes' amputation had been performed on one foot and tarsectomy on the other for severe talipes; and other cases, shewing the improvement according to the mode of treatment and length of time.

Wednesday, February 4th, 1891; Mr. JOHN W. TAYLOR, F.R.C.S., in the chair.

Exostosis.—Mr. Haslam shewed a small branched exostosis that he had removed from a woman aged 34. It was growing from the upper and inner aspect of the humerus and was causing pain by its pressure on the branches of the brachial plexus.

Phosphatic Calculi.—Mr. Haslam shewed some phosphatic calculi that he had successfully removed by the suprapubic operation from a man aged 70.

Ovarian Cyst with Twisted Pedicle.—Mr. John W. Taylor, in shewing a marked specimen of this condition, which had been diagnosed previous to operation, pointed out the main elements which go to form a rational and successful diagnosis. (1) The previous knowledge of a cystic tumour of moderate size (presumably ovarian), situated fairly high in the abdomen and therefore possessing a long pedicle. (2) The sudden occurrence of abdominal pain and other local peritonitic symptoms, together with marked and rapid increase in the size of the tumour. When these conditions are satisfied, strangulation of the cyst with hæmorrhage into its cavity and walls may be inferred with every prospect of the diagnosis being correct, and a correct diagnosis leads to early and usually to successful treatment. In the case reported the patient was removed to a private ward for operation and made an easy and rapid recovery.

Ruptured Heart.—Mr. David Walsh shewed a heart which, with its great vessels, had been extensively ruptured by indirect violence. A patient suffering from advanced phthisis jumped from the top storey of the Workhouse Infirmary. At the *post mortem*, fractures were found in both dorsal and cervical vertebræ as well as in the right scapula and ribs of the same side. The pericardium was distended with dark blood-clot. The heart shewed the following lesions:—An irregular rent opened into the cavity of the right ventricle on its front aspect; the tip of the auricular appendix was completely torn away, and was found lying loose among the clots in the pericardium. The left ventricle shewed a small non-penetrating laceration of substance at its left border, and a ragged rent at apex communicating freely with the cavity. The aorta was almost completely severed from its cardiac origin by a spiral slit running downwards from left to right across the front of the vessel. The pulmonary artery shewed a longitudinal rent, about an inch in length, on its left side near the bifurcation, exactly opposite the torn auricular appendix. The heart-substance appeared fairly healthy, and the vessels no more brittle than might be expected in a patient of sixty-six suffering from an exhausting disease. The lungs were completely consolidated in their upper halves, and closely adherent both to chest wall and to pericardium. This latter condition would partly account for the extensive nature of the injuries to the heart. As the man fell head first, the abdominal viscera would be forcibly impacted against the diaphragm, which, in turn, would crush the heart against the solidified lungs. There was also a superficial laceration of the left lobe of the liver.

Paper.—Dr. Malins read a paper on rudimentary organs of generation in the female, which was illustrated by six cases.

REVIEWS.

FOODS AND DIETARIES.*

PROBABLY there is no subject upon which the average general practitioner needs a guide so much as in the matter of foods and dietaries for the sick. This is unquestionably due to the absence of this difficulty in hospital work, where the patients are put on the most suitable diet, and have to submit to a monotony which in private practice it would be sometimes impossible and often difficult to induce them to accept. At the same time the desire to lay down special rules of diet in each disease is largely foolish, and there are many conditions in which the patient is all the better for being told to eat whatever he knows does not disagree with him.

The circumstances under which it is desirable to lay down dietetic rules are (1) when, owing to some general or local condition, there is inability to digest ordinary food; (2) where ordinary food, though digested, cannot be assimilated; and (3) where ordinary food, though digested and assimilated, produces harmful results.

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* Foods and Dietaries: a Manual of Clinical Dietetics. By R. W. Burnet, M.D. London: Charles Griffin and Co. 1890.

In the first of these groups we have all acute febrile diseases, in which, owing to the diminution of the hydrochloric acid of the gastric juice, the gastric digestion is weakened. Here common sense has forestalled science by insisting that only light articles of food shall be taken. This group also includes all diseases of the gastro-intestinal canal, such as catarrh, ulcer, cancer, obstruction, etc. In these the relations are mainly mechanical, so that rules of diet resolve themselves into regulations for small frequent meals of bland, soft, semi-liquid, or liquid food. In the second division diabetes mellitus stands alone, and our dietetic rules are simply those which forbid starchy and saccharine articles of diet, and those which suggest certain substitutes for these forbidden things. In the third division we have such diseases as gout, obesity, and Bright's disease, where we attempt to formulate rules to exclude those articles of food which appear to have most share in the mischief. In this group we cannot deduce laws from known principles, as we do not possess all the necessary physiological knowledge. Our rules are therefore mainly empirical.

Dr. Burnet has not made any attempt to place his subject on a scientific basis, but has contented himself with giving detailed directions in all diseases, such as asthma, pulmonary emphysema, chronic bronchitis, and pleurisy with effusion. None of these require separate treatment, but could be grouped or given as illustrations of the necessity for particular kinds of diet. Such a book as this may please the public, but cannot educate the profession. It leaves the reader no wiser than it found him, as it inculcates no principles. When we come to consider the details, we find that the dietaries are in the main simple and judicious, but not always. The writer, while making the diet of chronic gastric catarrh very rigid in some respects, has evidently not grasped the important clinical fact that the stomach in this condition digests all vegetable substances with difficulty, and that *all* uncooked fruit and vegetables should be excluded, and only a little well-cooked floury potato and cauliflower permitted. We are also sorry to observe that he recommends spirits. It is well known that the use of spirits is one of the commonest causes of gastric catarrh; and it is a mistake to suppose that this is only when they are taken neat, as Dr. Burnet seems to suggest. We are sure it is wiser to forbid spirits and, if any alcoholic drink is required, to allow a small quantity of dry champagne or a glass of claret in half a tumbler, of soda water. Again, in atonic dyspepsia Dr. Burnet also recommends spirits, without any reason. Atonic dyspepsia is common in women, whom it is most objectionable to allow to drink spirits without grave necessity. The amount of detail under this head is quite ridiculous. Persons suffering from atonic dyspepsia may eat anything that does not disagree with them; the important thing is that they should take their meals in equal quantities, at equal intervals, and at regular times, with a little hydrochloric acid after each meal.

QUAIN'S ANATOMY.*

THE new edition of that classic work, "Quain's Anatomy," differs in many respects from any of its predecessors. In the first place, it is to expand into three volumes in place of the two which have recently been the limit; and in the second, these are to be split up into parts separately bound in volumes of a convenient size for carrying about. The first two parts are now in our hands, and we very heartily congratulate the authors upon the good sense which they have shewn in the choice made of the two portions which should first appear.

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* Quain's Anatomy. Tenth Edition. Vol. i., Part i. : Embryology by Professor Schäfer. Vol. ii., Part i : Osteology by Professor Thane. London : Longmans, Green and Co. 1890.

Professor Schäfer's Embryological contribution was badly needed by medical students, who have up to now been without any work exactly suited to their wants dealing with this subject. Students of Biology had the works of Balfour and Foster and of Haddon, which were well suited for their purpose but quite unsuited for that of medical students; while the ideal book for the latter class, Hertwig's Entwickelungsgeschichte, was closed to most of them owing to the tongue in which it was written, and to no translation having as yet appeared.

The account in the last edition of Quain's Anatomy was in some places absolutely unintelligible to the student relying upon it alone, and was moreover rendered hopelessly out of date by the appearance of His's great work, "Anatomie der menschlicher Embryonen". Professor Schäfer has largely and wisely availed himself of this work as well as that of the Hertwigs, and the result is an Embryology well suited to the purpose of medical students, and the first worthy of such a title since the subject of development became of sufficient importance to warrant a separate volume. There are numerous illustrations, a very large number of which are new to Quain, whilst a considerable proportion are coloured.

Students reading for all the higher medical qualifications, and especially those directing their attention to the Primary Fellowship examination of the Royal College of Surgeons will find it absolutely essential to procure and carefully study this book.

Turning now to the second part at present in the hands of readers, that relating to Osteology, which is from the able pen of Professor Thane, we may also congratulate this writer upon the change for the better which has taken place in the treatment of this subject. The chief peculiarity of the Osteological part of former editions of Quain was that it was absolutely impossible to learn osteology from it, so that the student investing in that anatomy was put to the further expense of purchasing some other book from which to learn his "bones." This will now be no longer the case, for in the part under review he will find all that he requires. The ancient indistinct, vague and generally useless illustrations have disappeared to the limbo of dead woodcuts, and in their place we find a number of new clear distinct illustrations drawn especially for this edition, and of the kind likely to be of real service to students. Those who are acquainted with Professor Thane's work will not require to be told that his knowledge of the literature of his subject is thorough, and the present part bears every mark of the careful application of this knowledge.

We are not informed when the remaining parts will appear, but if they keep up to the standard of those which we now have the work as a whole will be a credit to English anatomy and to the great school of University College.

TEXT-BOOK OF CHEMICAL PHYSIOLOGY AND PATHOLOGY.*

Those of us who have watched the recent developments of scientific medicine, especially in the domain of Bacteriology, cannot help seeing that an intimate acquaintance with physiological and pathological chemistry will be required on the part of the individual who wishes to understand the further progress of medicine, much more on the part of him who may be anxious to assist in its progress.

Unfortunately in this country physiological and pathological chemistry is not taught as it ought to be, nor will it be until we have professorships in this branch of chemistry. The professor of chemistry, as a rule, thinks it necessary to deal in the most cursory manner with this branch, while the professor of physiology has not time left to teach it as it should be taught. The "average" medical student, for some reason or another, despises chemistry, and it is a well-known fact that some of our best physicians preserve this traditional feeling throughout life. It is therefore apparent that while this state of things lasts progress must be necessarily slow, and we are meantime being beaten, by the Germans especially, who are working while we are wrangling about the best way of teaching our medical students chemistry.

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* A Text-book of Chemical Physiology and Pathology. By W. D. Halliburton, M.D., B.Sc., M.R.C.P., Professor of Physiology at King's College, London, etc. London: Longmans, Green and Co. 1891. Pp. xx. and 874.

Whether we like it or not the time is coming, and even now is upon us, when a medical man ignorant of chemical physiology and pathology must feel that he is "out of the running." It behoves everyone therefore, ere it is too late, to make himselt acquainted with what has been done and what is being done in this line of research.

Hitherto the text-books on this subject in England, with one or two exceptions, have been unsatisfactory. Why this was so we need not discuss; but it is a fact, well known to students of the subject, that in order to get a good grasp of it one had to know German and read the works of Hoppe-Seyler, Gorup Besanez, and other German investigators, and take in such papers as the *Zeitschrift für physiologische Chemie*, as no one took the trouble to give us abstracts in English, or at least satisfactory abstracts, of the articles that appeared therein.

In this book of Professor Halliburton's we have an account of every addition to our knowledge worth noticing in this direction, and the whole subject is treated in a most masterly manner. Part I. treats of Methods and Analysis. Their apparatus, reagents, weights and measures, analytical methods, including ultimate analysis and gas analysis, are fully described; also the optical instruments required in chemico-physiological investigations. We are glad to find also an excellent description of the spectrophotometer. Part II. deals with the Chemical Constituents of the Organism. In this the subject-matter is arranged in such a clear and simple manner that the veriest dunce cannot fail to profit by studying it. The chapters in this part which treat of the proteids and of the ptomaines and leucomaines will be read with great interest by all medical men. The chapter, too, on fermentation is well done and up to date.

In Part III. Prof. Halliburton describes the chemistry of the tissues and organs of the body. Here we find a good description of the micro-chemistry of the cell generally. Then follows a complete account of the chemistry of the blood in health and disease, and a chapter on the blood of invertebrates, which will be very useful to the biological student. The chapter on lymph and allied fluids contains matter of great medical interest, including the author's well-known researches on serous fluids. The remaining chapters of this part deal with respiration, muscle, epithelium, the connective tissues in health and disease. Under the last heading myxœdema, gout, rickets, and other diseases of bone are fully discussed. The chemistry of the nervous system and of the various organs of the body is also carefully done. Part IV. treats of alimentation, under which food, diet, the digestive juices, putrefactive processes in the intestines, the fæces, and absorption are included. Under bile we have an account of the invertebrate liver. Part V. deals with excretion; and in this part there is a very complete and accurate account of the chemistry of the urine, including directions for the quantitative analysis of the most important of its constituents in health and disease. Only the best and most recent methods are given. Part VI. discusses general metabolism, under which the chemistry of the exchange of material and of animal heat is clearly put.

It will be seen from this very meagre account of the contents of Professor Halliburton's volume that he has missed nothing of importance; full justice is done to each investigator, and when necessary their results are criticised. In speaking of the work of those who differ from him, the author gives with impartiality an account of both sides of the question, and does not try to take an unfair advantage. Copious references to the literature of each subject are given, and a perusal of the text shews that the original sources of information have been consulted. In fact, we have no fault to find with any part of this most valuable book. It is certainly the best treatise on physiological and pathological chemistry that has yet appeared in

England, and is quite equal to any published abroad. We believe that it will find a place beside Quain's "Anatomy," Foster's "Physiology," Quain's "Dictionary," Brunton's "Pharmacology," and other favourites, which even "old students" find indispensable. It will also be found of the greatest possible use to the student of Biology. We ought to add that illustrations are given where necessary.

DIFFERENTIATION IN RHEUMATIC DISEASES (SO-CALLED).*

This brochure is a reprint of a paper read before the Bristol Medico-chirurgical Association and published in the *Lancet*. It sets out with a statement of the desirability of a more detailed study of the etiology and symptoms of diseases which are unscientifically grouped under the generic name rheumatism, and the hope is expressed that by doing so we may prevent the great amount of misery which prevails in the form of chronic, advanced, and incurable joint troubles. But the sum of it all is that rheumatoid arthritis (osteitis deformans) is to be distinguished from the joint troubles of rheumatism proper. This, we maintain, was done long ago, and any confusion now existing depends upon defective education, and not on the backward state of medical knowledge. The only statement which is not quite in accordance with ordinary doctrine is that osteitis deformans is due to "struma." We should like to ask the author what he means by struma? Since Koch's discovery of the tubercle bacillus this word is rather out of date. It either means tuberculosis or a predisposition to tuberculosis; but the mere fact that patients suffering from osteitis deformans have a family history of tuberculosis does not prove that the joint affection is due to tuberculosis. The same association is observed in diabetes, but while we record the fact, we are not able to explain the connection. Gout and tuberculosis are also frequently associated in family histories. In discussing treatment, the author deduces from his doctrine of struma the value of cod liver oil in the early stages. This is not a new thing, as it was used as a popular remedy for "rheumatism" before anyone thought of employing it for phthisis.

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* Differentiation in Rheumatic Diseases (So-called). By Hugh Lane, L.R.C.P. London: J. and A. Churchill. 1890.

The author practises at Bath, and consequently the waters of that famous spa and the course of treatment pursued there are warmly advocated, and the folly of persons who do not come soon enough or stay long enough is pointed out very plainly. The text is illustrated with some very well-executed lithographs of hands deformed by rheumatic and rheumatoid affections. These are excellent.

The author's literary style is florid, and at times his eloquence carries him so far away that he ceases to be intelligible or grammatical. Let the following suffice for a specimen:—"The after results in all cases will be decided to no inconsiderable extent by the mode of life which the patient pursues; and, unfortunately, in so many of the cases from which we have derived so much valuable and interesting information, satisfactorily as they may have been turned out of hospital at one time—have appeared some months later suffering from an aggravation of the symptoms—often so clear as to shew that only fatigue, and often that there has been a forced disregard, or a self-imposed disregard of rule—but at the same time it must be allowed them, a bounden obligation has obliged them to pursue avocations so unconducive to a more satisfactory end."

LYMPH-STASIS.*

THIS neatly bound brochure of seventy-three pages large octavo represents a vast amount of painstaking research. It is a condensed epitome of Dr, Chaffey's experience as Pathologist to the Children's Hospital at Great Ormond Street, and afterwards as Physician to the Children's Hospital at Brighton.

In brief, Dr. Chaffey's theory is this: Retardation of the lymph current prevents the due nutrition of the part, or the proper absorption of the products of inflammation; hence the region so suffering becomes an eligible site for the residence of the bacillus of tubercle, or hinders the resolution of a pneumonia.

When we come to the causes of lymph-stasis itself, we do not follow our author so clearly. He states them thus:—

1. Under normal conditions the passage of lymph through a structure such as that of a lymph gland must be very materially checked. Is it not possible, therefore, that certain inherited variations from the normal type disturb this delicate adjustment, which fails possibly on account of the larger size of the cell elements? Rindfleisch has shewn this increase in size to be a notable feature of scrofula; hence caseous glands will be a characteristic manifestation of scrofula.†

2. Conditions other than that of inherent defect in the lymph-glandular system:—

   (a) Deficient blood circulation, as in great prostration during the last days of illness.
   (b) Increased physiological action of an organ.
   (c) Acute inflammation from any cause.

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* Lymph-Stasis: or Retardation of Lymph, as an Element in the Causation of Disease; especially in regard to Scrofula and Tuberculosis. By Wayland C. Chaffey, M.D. Lond. London: H. K. Lewis. 1890.

† It is interesting to compare with this what Sir Richard Blackmore said in 1725 in his "Treatise on Consumptions," page 17. "Tubercles," he says, "arise in this way: That some parts of the blood becoming by their size or figure disproportioned to the small winding channels of the glands, cannot freely slip through, but are entangled and intercepted in their way, by which means they obstruct the narrow ducts, and being augmented by the constant accession of more such irregular particles, they elevate and swell the gland."

The greater part of the book is taken up with an analysis of 116 cases. These, in the main, bear out Dr. Chaffey's contention that the caseation of gland is anterior to the deposit of tubercle, in so far as the age of these conditions can be judged *post mortem*, and the distribution of the disease also appears in his favour; but there is nothing like a convincing proof brought forward. Indeed, from the nature of the theory, the proofs must be of the negative character.

But the sterling value of the book resides in the large number of cases accurately recorded; and this is unaffected by the truth or not-truth of Dr. Chaffey's very plausible theory.

INFLUENZA, OR EPIDEMIC CATARRHAL FEVER.†

THIS book is a compilation consisting in part of a reprint of Dr. Theophilus Thompson's "Annals of Influenza" with the addition of certain contributions to the description of the recent epidemic. It is much to be regretted that the latter part was not made more complete by the incorporation of the numerous curious sequelæ, accounts of which were published in the medical press in the course of last year. The author does not venture to decide the vexed questions as to the etiology or mode of propagation of the disease, but contents himself with recording some of the facts. No mention is made of the very interesting report on the outbreak of influenza at the Birmingham Jail or of the statistics of influenza at the various public institutions in Birmingham which were published in this *Review*. The book is a solid and valuable one, but as it only pretends to be a compilation, it should have included some account of foreign experience and certainly all that could be obtained in this country.

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† Influenza, or Epidemic Catarrhal Fever. By E. Symes Thompson, M.D., F.R.C.P. London: Percival and Co.

ARE THE EFFECTS OF USE AND DISUSE INHERITED ?[*]

THOSE members of our profession who have time and inclination to keep themselves informed of the course of biological controversy cannot have failed to observe how much the attention of biologists has, during the past few years, been directed to the question forming the title of the book under review. Darwin and after him Spencer have in their works answered the question in the affirmative, but grave doubt has been recently thrown upon the accuracy of this conclusion. Weismann, especially in his essays, which, as they appeared in German, attracted so much attention, an attention which has been increased in this country since the publication last year of a scholarly translation, edited by Mr. E. B. Poulton, for the Clarendon Press, denies absolutely the possibility of any such inheritance save under the most limited conditions, and this view has found many supporters in this and other countries, so great an authority and so cautious a writer as Mr. Francis Galton stating that "It is extremely difficult to see how acquired faculties can be inherited by the children; it would," he goes on to say, "be less difficult to conceive of their inheritance by the grandchildren." It is very obvious that the question under consideration is one of the first importance, and that it has the widest possible bearings and applications. In the book under review Mr. Ball sets himself the task of considering the various cases which have been brought forward in support of the possibility of the transmissibility of acquired conditions. His examination of these cases is very interesting, and may be commended to all desirous of obtaining within a small compass a clear account of the subject.

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[*] Are the Effects of Use and Disuse Inherited? By William Platt Ball. London: Macmillan and Co. "Nature Series." 1890.

OUTLINES OF PRACTICAL HISTOLOGY.*

Professor Stirling certainly exhibits a most becoming modesty in bestowing upon this comprehensive work the title of "Outlines." It consists of between three and four hundred fairly closely printed pages, and contains about the same number of illustrations, so that those who adopt it as their guide will have no reason to complain of scantiness of instruction. The book commences with an account of the necessary apparatus, the microscope being the most important, of course. If we wanted to be hypercritical we might express a doubt whether it is necessary to give the student illustrations of eight different instruments in this part of the book, or whether such information might not as well or better be obtained from the catalogues of microscope dealers. However, as these illustrations are not given in the place of other and more important ones, but in addition thereto, it would be ungenerous to quarrel with the exuberant goodness of heart of Professor Stirling and his publishers.

The directions for making preparations are most complete and exhaustive, and full descriptions of the specimens themselves are also given. The student who works conscientiously through this book and its exercises will only have himself to thank if at the end of his task he has not a knowledge of histology equal to any emergency.

DR. KOCH'S REMEDY—THE TREATMENT OF CONSUMPTION.†

This work is the production of a writer who is neither well-informed nor modest. If his aim has been to advertise himself by writing upon a subject of much attention, he has to some extent succeeded, as he was previously unknown to us. He patronises the "British public," chides the medical press, and censures the "credulity" of the medical world. But while this self-constituted authority professes to be so much wiser than his fellows, he betrays gross ignorance when he comes to actual facts. He repeats in several places that the tubercle bacillus is only a common atmospheric bacillus, which has found a suitable resting and breeding place. He compares very boldly Koch's method to Pasteur's, and declares it to be a close imitation of it, although at the time this was written Koch had not published the nature of his fluid, and it is now known to be very different from Pasteur's "attentuated virus," and to act in quite a different manner.

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* Outlines of Practical Histology. By William Stirling, M.D., Sc.D. London: Charles Griffin and Co. 1890.

† Dr. Koch's Remedy—The Treatment of Consumption. By A. E. Bridger, B.A., B.Sc., M.D. London: John Hogg. 1891.

In spite of his bounce the author finally recommends the use of Koch's fluid in all tubercular affections, except phthisis, without any restriction, but in phthisis he makes the singular condition that the disease must not be advanced, and must have a cavity, as "one of the certain effects of Dr. Koch's method is to produce in the lung a cavity, and in phthisis you don't want a cavity if you can possibly avoid it." Of course this statement is as absurd as the rest of the book.

NOTES ON TYPHOID FEVER.*

THIS is a work which may be read with profit by anyone who has to practise his profession in the tropics. It contains a great deal of clinical information which read in the light of personal experience will be found valuable. The great fault of the book is the lack of arrangement, and of a logical and orderly method of dealing with the numerous questions raised. Surgeon-General Marston ventures to dispute the doctrine that typhoid fever is a specific disease, and suggests that it arises in India spontaneously as the result of altered climatic conditions, but it appears to us that the facts to which he draws attention are predisposing elements of the highest importance, yet do not dispose of the necessity for an exciting cause. He makes the statement that Wunderlich has laid down the temperature ranges of typhoid fever too arbitrarily, but he does not give any cases or charts to prove his objection.

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* Notes on Typhoid Fever: Tropical Life and its Sequelæ. By Jeffery A. Marston, M.D., C.B., M.R.C.P., F.R.C.S. London: H. K. Lewis.

The chapters on tropical life, and on the various diseases that occur as sequelæ to a residence in the tropics, are loosely written, and traverse a wide field of study without conveying any very definitely new facts or ideas. The cases of neurasthenia observed in persons who have undergone exposure to great heat are interesting.

THE DAUGHTER: HER HEALTH, EDUCATION, AND WEDLOCK.*

THIS is a very good little book, written with sound common sense and delicacy of feeling with the purpose of conveying to a mother many sensible hints respecting the physical and mental training and care of herself and her children. It was written, we are told, at the request of a young mother, to supply a want she had experienced of a guide on such subjects, and it was ultimately published in the hope that it might have a wider sphere of utility. We do not doubt that it will receive a very great measure of appreciation both in England and America, and become a deservedly popular domestic handbook.

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* The Daughter: Her Health, Education, and Wedlock. Homely Suggestions for Mothers and Daughters. By William M. Capp, M.D. Philadelphia and London: F. A. Davis. 1891.

HYGIENISCHE RUNDSCHAU.*

We have before us the first number of the above journal that is to appear bi-monthly under the co-editorship of Professor Carl Fraenkel, of Königsberg, and Dr. von Esmarch, of the Hygiene Institute in Berlin. From a perusal of its contents we think it will be welcomed by all who are interested in practical hygiene and bacteriology. Although each number will contain at least one original article, the chief object of the editors is to issue excerpts and reviews of all current literature on hygiene, bacteriology, and especially pathological mycology.

The leading article in the present number is from the pen of Dr. v. Esmarch on the subject of disinfection. It contains many hints of practical importance, and medical officers of health, who may have occasion to advise their sanitary authorities in the matter of erecting disinfecting apparatus, will find it worth their while to consult it.

All English workers in the above subjects are earnestly invited to send reprints of their communications to either of the above editors. We certainly commend the periodical to such of our readers who are engaged in sanitary work, and heartily wish it success.

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* Hygienische Rundschau. Edited by Prof. Carl Fraenkel, Professor of Hygiene in the University of Königsberg, and Dr. E. von Esmarch, Professor of Hygiene in the University of Berlin. Published by Hirschwald in Berlin.

Local Notes.

HOSPITAL REFORM.*

THE Joint-Committee appointed more than a year ago to consider the statements made in a Preliminary Report issued by the Medical Committee on the Voluntary Hospital System in Birmingham, has now issued its Report. It confirms the accuracy of the startling figures contained in the Preliminary Report, without expressing any opinion as to the proportion of the population of Birmingham receiving gratuitous medical treatment; and it confirms the opinion that there is injurious over-crowding of the Hospital Out-patient departments in a way which is detrimental to the patients themselves, to students, and to the medical profession, and the Report states that "if the numbers of patients go on increasing at anything like the rate at which they have increased of late years an utter breakdown of the present arrangements must be the result." The Committee remarks on the absence of any proper system of enquiry into the pecuniary fitness of the cases, and considers that it has received abundant evidence of the trivial nature of a large part of the cases that crowd the Out-patient departments. It considers registration fees act injuriously by encouraging the opinion that the patients pay value for what they receive, while tickets are objected to as placing the right of selection in the wrong person. The Report concludes with the following recommendations :—

1. The formation of a General Council representative of all the public medical institutions in the city.
2. The formation of an Inquiry Agency to investigate the circumstances of applicants for treatment at the hospitals.
3. That, apart from first aid and urgent cases, regulations

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* Report of Hospital Reform Enquiry Committee. E. C. Osborne and Son, Birmingham.

should be framed by the hospitals to exclude trivial cases, and cases where either the patients are in a position to pay for such treatment as they may require, or which could be more properly dealt with under the Poor Law.

4. That facilities should be given for cases so excluded being dealt with by dispensaries or provident associations.

5. That any person recommended by an approved provident association or by a qualified medical practitioner should, as a rule, be admitted to the out-patient departments of the hospitals without further inquiry.

We have only had time to read the Report over once, but the impression we have obtained is that the medical profession is much indebted to Judge Chalmers and the gentlemen who have acted with him on this committee, and that the recommendations submitted are practicable, useful, and desirable.

NEW INVENTIONS, DRUGS, ETC.

OPPENHEIMER'S PALATINOIDS.—We can strongly recommend to our readers the so-called palatinoids of Oppenheimer as a great improvement in the administration of drugs. They consist of little gelatine capsules, very readily soluble at the temperature of the body, containing fixed quantities of drugs. In this way nauseous remedies can be easily swallowed, while there is no doubt that the drug is speedily liberated in the stomach. The cost does not seem to us to be so serious as to interfere with the wide adoption of these ingenious preparations.

WAFER CACHETS. CHARCOAL TABLOIDS.—We have received from Messrs. Burroughs, Wellcome and Co. a specimen of their Wafer Medicine Cachets. These are composed of pure rice starch, and are well adapted as a means for patients to take unpalatable powders or tabloids without tasting them. The

Cachet is spread out in the folder, as shewn in the block (sent with the samples), and the contents are placed in the cap. The lid of the Cachet is then wetted and brought over by means of the lid of the holder. When pressed on the top of the cap it is completely sealed, and prevents egress of the contents into the mouth. Just prior to taking the Cachet it should be dipped in water and then placed on the tongue, and may be swallowed with a little water quite as easily as a small oyster. Cachets have been used for a long time in France, Italy, and other countries on the Continent, and have given every satisfaction.

The Charcoal Tabloids are intended to readily disintegrate in the stomach when swallowed with water. Pure Willow Charcoal Tabloids are the latest addition to their already extensive list of tabloids. Each Tabloid contains five grains of pure willow charcoal with a small quantity of sugar. The Tabloid is not unpalatable if allowed to slowly dissolve on the tongue like a lozenge. It may, however, be swallowed intact with a little water. When it reaches the stomach it will rapidly disintegrate to a fine powder, and will thus exert the desired physiological effect. Many physicians have been debarred from prescribing this drug on account of its obnoxious appearance when given suspended in mucilage as a mixture, or in the form of biscuits, etc. Other tabloids belonging to the same class as charcoal are those of such comparatively insoluble drugs as sulphonal, salol, dioxide of manganese, bismuth subnitrate, phenacetin, and antifebrin.

New Books, etc., Received.

Cyclopædia of the Diseases of Children. Edited by JOHN M. KEATING, M.D. Vol. iv. Philadelphia: J. B. Lippincott and Co. 1890.

The Action of Water on Lead. By JOHN HENRY GARRETT, M.D. London: H. K. Lewis. 1891.

Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by J. BATTY TUKE, M.D., and NOEL PATON, M.D. Vol. iii. Edinburgh and London: Young J. Pentland. 1891.

The Middlesex Hospital. Reports of the Medical, Surgical, and Pathological Registrars for the Year 1889. London: H. K. Lewis. 1891.

The Year-book of Treatment for 1891. London, Paris, and Melbourne: Cassell and Co. Lim.

Our Baby: for Mothers and Nurses. By Mrs. LANGTON HEWER. Bristol: John Wright and Co. 1891.

A Text-book of Chemical Physiology and Pathology. By W. D. HALLIBURTON, M.D., B.Sc., M.R.C.P. London: Longmans, Green, and Co. 1891.

⁂ Authors can have reprints of articles at the following rates:—

Not exceeding 8 pages	...	8/-	per 100
„ 16 „	...	12/6	„

The re-arranging of the type is the principal cost in the production of these reprints, so that smaller numbers will be the same price. Larger numbers at a proportionate reduction.

NOTICE.—*All Communications should be addressed to the Printers and Publishers, Messrs. Hall and English, 71, High Street, Birmingham.*

THE
BIRMINGHAM MEDICAL REVIEW.
APRIL, 1891.

ORIGINAL COMMUNICATIONS.

BRITISH GYNÆCOLOGICAL SOCIETY.
PRESIDENTIAL ADDRESS.*

BY W. CHAPMAN GRIGG, M.D., M.R.C.P.

GENTLEMEN—

The first thought that presents itself to everyone who has been honoured with a call to the presidential chair of this large and flourishing society is naturally the difficulty of alighting upon a suitable subject for the remarks with which it is customary to inaugurate one's year of office. Not, indeed, that there is any lack of moot questions and controversial topics—such we have in abundance—but it appears to me that they are better left for discussion at our meetings than as material for a presidential discourse. Looking back upon the history of the twin subjects which engage our attention, during the past few years I have been struck by the changes that have taken place in contemporaneous professional opinion on various points, and on the evolution of thought and practice which have marked the period. I am therefore tempted to imitate the prudent method of large business companies, and to endeavour, within the measure of my ability, to sum up and specify the progress effected during the last five years; in fact, to strike an intellectual balance-sheet for the quinquennial period.

Before entering upon the subject, however, it behoves me to say a few words in respect of the two distinguished obstetricians, now gone to their rest, whose names are known wherever obstetrics is studied as a science.

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* Delivered January 22nd, 1891.

Let me speak, in the first place, of Louis Adolphe Neugebauer, Professor of Gynæcology at the University of Warsaw, who died on the last day of the meeting of the International Medical Congress at Berlin. A man of large intellect, of unwearied industry, a neat and most painstaking operator, he devoted his whole life to the furtherance of his profession and to the relief of sufferings peculiar to the female sex. He entertained a great admiration for English operators, especially in his own branch. He saw our shortcomings, but appreciated the boldness and skill of our pioneers in abdominal surgery. His likeness is in our journal, which is fast becoming an album of the great obstetricians and gynæcologists who have died since it was first started.

The second is one who, in the course of a laborious and well-filled lifetime, did much to add to the dignity of his profession and the therapeutical resources of his art. I am of course alluding to the late Dr. Matthews Duncan, whose portrait in the November number of our journal is the best I have seen. It would be affectation not to admit that his views and ours were in many respects distinctly and irreconcilably at variance. Great as were his attainments, and unquestionable as was his scientific acumen, he did not take kindly to the methods which, in other hands, have shed so much lustre upon gynæcology as a curative art, and have done so much to raise it from the level of the sheerest empyricism to the position of an exact science. Duncan on the one hand, and Tait and Bantock on the other, represent the old and the new school of gynæcology. It is a curious fact that Duncan and Tait, these two irreconcilable adversaries, met, so far as I am aware, on only one or two occasions in consultation, and the first meeting, by a curious coincidence, was over a case of my own. It was the first time that Dr. Duncan had an opportunity of witnessing Mr. Tait's method of operating, and his remarks to me on that occasion are perhaps worth recording. After thanking me for having afforded him the opportunity of assisting at and witnessing the operation, Dr. Duncan observed: "Mr. Tait is a remarkable man. He operates in the converse way to that we are taught, and yet he succeeds in attaining the object which we all desire." Later on he seems to have entertained less charitable views on Mr. Tait's theories and methods; and he subsequently placed himself in a position directly antagonistic to modern practice. I need not here discuss the possible reasons which led to this divergence of thought. I have heard that it was Dr. Duncan's lament that he had never held any surgical appointment as a young man, a fact to which he attributed his want of operative skill in later life, and doubtless led him to look unfavourably on operative measures. With Dr. Duncan has disappeared the champion of a system which is fast becoming obsolete. The gynæcologist, conscious of his ability to deal successfully with a large and ever-extending class of cases formerly left to their unhappy fate, not unnaturally resents the monopoly which the general surgeon seeks to arrogate to himself, and claims the right to perform the special operations which fall within the legitimate scope of his department.

Returning, however, to my subject, I may fairly congratulate the Society upon the highly satisfactory advance in numbers and influence which has taken place during the past five years. In 1885 we numbered 296 Fellows, and the future of the Society, though promising—as it was indeed from its very constitution—was by no means assured. Now we number 525, and thanks to the energy employed by successive generations of officers and the devotion which our Treasurer, Dr. Bantock, has shewn in the financial management, we stand on a sure footing, and have conquered for ourselves an unquestioned position in the gynæcological world. Our proceedings are recorded in a journal which reflects the greatest credit upon the energy of our Editor, and serves not only to keep our provincial Fellows *au courant* with every step in advance of medical science, but it also enables them to form an opinion upon important matters of medical policy, such, for instance, as the Registration of Midwives Bill, Although medical politics form no integral part of the proceedings of a scientific Society like ours, the exhaustive discussion which occupied the attention of the Society during the concluding meetings of our last session cannot have failed to enlighten the profession and the public on the main points at issue. The propriety of such discussions has been questioned, and it must be obvious that on such a subject they are pregnant with influence on the future of the profession at large. It would be as unreasonable to object to the time of Parliament being taken up with discussing questions of State policy—of war or peace, protection or free trade—or other subject of primordial importance instead of devoting attention exclusively to legislation. Such a question as that of the education and training of midwives is fraught with more importance to the well-being of the community than the most brilliant and ingenious innovation in the matter of this or that difficult operation; for the latter can, at most, apply to a limited number of individual cases, while the other is one of truly national concern. I only hope that as a result of the discussion, which it will be to the honour of the Society to have initiated, legislative action will be taken, with all the precautions and restrictions which collective experience has suggested for the protection of the public and of the profession.

It is much to be regretted that the opponents of this Bill did not consider the subject from a broader and juster standpoint. It seems to me that those who have at heart the social and physical well-being of their profession ought to hail with pleasure any measure which would have for effect to put a stop to attendance on midwifery cases by medical men for sums of half a guinea and under. It tends to lower the profession and to act injuriously on the health and mind of men who devote themselves to this class of practice. I would moreover protest against it in behalf of the women themselves. In these ill-paid cases the practitioner is often compelled, by the exigencies of private practice, to hasten on delivery by the use of instruments, etc., instead of giving nature a fair chance to accomplish her own work. From a large experience as physician to the largest lying-in hospital in England, as well as obstetric physician to a general hospital, I do not hesitate to say that the majority of cases which come under my notice for injuries received during delivery are not those which have been attended by midwives, but by the medical men or their assistants. I feel sure that all men who have much to do with this class of cases will bear me out in saying that more harm accrues from what I may term "labour under pressure" than from the delay, which is about one of the worst things that can happen in the hands of a too patient and not too discriminating midwife. Sir James Simpson used to relate that an old pupil of his, practising in a large manufacturing district, boasted of having turned in over "a couple of thousand cases;" and he used facetiously to remark that when God established the laws of natural labour he forgot the accoucheur. An old practitioner in a poor suburban district once informed me that he had applied the forceps in more than a thousand cases, "with," he added, "very few deaths." Can any man skilled in the diseases of women conscientiously deny that injuries which are directly attributable to such acts by medical men are numerically far more grave, and in the long run far more fatal, than those due to mere neglect or mismanagement of labour by unskilful midwives?

Again, in judging of the effect of this Bill upon medical practice, practitioners are apt to estimate the influence of the introduction of a higher standard of midwives by what they know of the present class of midwives. These being for the most part utterly and hopelessly ignorant of the first principles of their art, dread calling for medical assistance for fear of exposure and consequent damage to their reputation; and they even prefer to risk the loss of a life to risking the denunciation of a doctor, which would infallibly damage their practice. The skilled midwife, on the other hand, has been taught, as an essential part of her training, to look for protection and assistance at the hands of medical men, and she will early and readily seek his aid in all difficult cases, realising, as she will do, the danger attending delay. I hope I shall not be regarded as a traitor to fellow-practitioners in my department of practice if I affirm that parturient women as a rule would fare better if placed in the hands of skilled trained midwives under the surveillance of the medical men, the plan which obtains in all lying-in institutions. It is not unfair to say that the results at these institutions compare favourably with the results of labours in private practice, and especially with those attended by the busy practitioner, who, if he has the patience, has not the time to leave his cases sufficiently to nature. I hope the time is not far distant when every busy practitioner has a skilled midwife in his employ to attend his midwifery cases under his supervision.

The hue and cry against the introduction of trained midwives is on a par with that which I am old enough to remember following on the proposal to have properly trained nurses and monthly nurses. The old Mother Gamp was the ideal of the accoucheur, just as the charwoman and floor scrubber, *quâ* night-nurse of my youth, seems to have been the ideal of the surgeons. The same disastrous effects on the general practice were foretold, and the same interested opposition was excited. I trust that narrow petty views of professional interest will not mar the progress of legislation. Should it be carried out, however, I hope it will be on the basis of a thorough and serious course of training commensurate with the importance of the subject.

While on the subject of our Journal I should like to enter my protest against the perpetration of an omission which is not to our credit. I mean the fact that we do not notice the proceedings at our sister Society, the Obstetrical. I trust that it will suffice to have called attention to this invidious omission to render it unnecessary to refer to it again this time next year. We are now a large and prosperous Society and can afford to pass a sponge over petty jealousies of the past. We must not be afraid of criticism. Nothing imparts so much vigour to a society as a little wholesome criticism from time to time. On the contrary, "beware when all men speak well of thee," for whatever else it may mean it generally testifies to a lack of vitality and push.

Our Society has been reproached with the fact that our proceedings testify to a dearth of original scientific contributions, but while we may perhaps cheerfully utter our individual ***meâ culpâ***, it may fairly be urged in extenuation thereof that gynæcology as a science is as yet in its infancy. It is therefore unreasonable to expect of us papers possessing that depth of science and that nicety of detail which many years of attentive and consecutive study have rendered possible in other departments. We can however point to our achievements in the past as a justification of our existence, for they testify to the changes in public opinion which have been effected in no small degree by discussions and cases detailed at this society during its brief period of existence, and better methods of diagnosis and greater dexterity in operation have been achieved.

When this Society was founded only about six years since, not only the prevalence but the very existence of diseased conditions of the Fallopian tubes calling for operative interference was disputed, and the veracity of one of the greatest of living operators was called in question by responsible teachers of medical schools. They did not hesitate to stamp such diagnoses as mythical and the operations for their relief as unjustifiable—designating the operator as a "spayer." It needed a reminder that the reasons which alone could be held to justify such an appellation would equally authorise the use of the term "abortionists" to those who induce premature labour as a prophylactive or curative measure. Now it is often possible to diagnose with absolute certainty, and we may operate with a well nigh positive assurance of attaining the object in view. I do not propose at the present moment to make the panegyric of those eminent Fellows of our Society to whom we are so largely indebted for the revolution in pathological views and operative procedures which have been so successfully accomplished. These achievements speak for themselves, but I ask you to accept them as an encouragement to continued efforts in this direction and as an earnest of future progress.

A similar revolution has taken place in respect of the etiology, pathology, and treatment of extra-uterine, or, as Mr. Tait prefers to call it, ectopic gestation. We are now in possession of an explanation—a coherent account of the way in which this remarkable abnormality is brought about, and of the factors that determine its subsequent course. Rules have been formulated for our guidance in the different sets of conditions, and the practitioner is now no longer left to his unaided judgment in deciding what course to adopt. The success which has followed prompt surgical intervention under certain conditions has encouraged humbler practitioners of our art to do their best to save lives which must otherwise infallibly be sacrificed. I cannot insist too strongly on the influence which these departures have exercised and must continue to exercise on the practice of our profession. Formerly the general practitioner did not feel justified in intervening; partly because he doubted his own powers of diagnosis, and partly because, in case of failure, he would have been accused of rashness amounting to imprudence. Now, thanks to our discussions and to our journal, his diagnostic powers have been strengthened and extended, and he has the weight of professional opinion on his side in refusing to stand by while the unfortunate victim of the rupture of an extra-uterine cyst bleeds to death.

Another topic among those which must continue to occupy our attention from time to time is that of the electrolytic treatment of uterine fibroids. The subject is still far from having been thoroughly threshed out. Clinical and practical experience are still wanting in precision and extent to justify any authoritative conclusions. I am however sanguine enough to believe that the plan of treatment is one which has a future before it, though in a restricted class of cases. If it does nothing more, it has been shewn to possess a remarkable, even an unequalled influence in controlling the hæmorrhage to which the presence of these growths gives rise; and this is a quality which would fully warrant our having recourse to it when other means of checking these exhausting losses have failed. It also acts beneficially in dysmenorrhœa in a certain class of cases. It remains to be seen whether the arrest of the hæmorrhage caused by a uterine fibroid affects the growth of the tumour. Should any real influence in this respect be proved to exist, then the electrical treatment will prove of greater service than we have so far been prepared to concede. In any event, the effect of this treatment in causing absorption of inflammatory exudations renders it useful in the treatment of para- and peri-metritis.

The great question of asepsis *versus* antisepsis is fast leavening surgical opinion and practice, and this great movement owes its origin to gynæcological surgeons, and in no small degree to two of our most eminent Fellows, Mr. Lawson Tait and Mr. Bantock. Not the least noteworthy feature in relation thereto is the fact of the experiments having been carried out in a region which has always been notoriously amenable to septic influences. I can well remember thirty years ago how Sir William Fergusson, in his lectures on inflammation, used to instance the peritoneum as being so susceptible to these influences that a mere pin-prick was sufficient to destroy life by setting up inflammatory mischief. Yet the peritoneum, once touched only in fear and trembling by the operator, has proved docile and obedient when dealt with by hands freed from uncleanliness. Moreover, the permission to discard the use of antiseptics in abdominal operations, always attended by a distinct increase of risk to the patient, has divested abdominal operations of a by no means unimportant source of danger. The time I believe is not far distant when antisepsis will be looked upon as a curious and interesting phase in the history of surgery—in the evolution of the process whereby, as Sir James Paget has observed, the surgeon mounted to and attained his higher ideal of asepsis. It is however my opinion that antiseptics must always hold their sway in the puerperium for reasons which I cannot here discuss.

That our Society should have been instrumental in bringing about these and many other reforms is indeed a subject for deep congratulation. Our Society, it seems to me, is essentially devoted to the clinical aspects of our department. It affords an opportunity for practitioners to record their successes and their failures—the former for imitation, the latter as a warning and for the purpose of asking advice and counsel the better to avoid their recurrence. In this way, and in this way only, can we hope to obtain that sequence of facts, that comparison of results, which will enable us to form general rules and deduce reliable conclusions. For the present we must content ourselves with the exercise of our powers of observation, awaiting a riper experience and a wider grasp of the conditions underlying the maladies which we are called upon to treat, to deduce therefrom indications for our future conduct.

Having now completed my review of the past it may not be out of place if I allude to one or two matters which, if apparently insignificant, are not therefore beneath the notice of a Gynæcological Society. We all know how affections intrinsically of little importance may and do give rise to symptoms which entail much suffering. The importance of a morbid process of a departure from health must be gauged by its ultimate results and not from its immediate extent. Let me take up the question of pruritus vulvæ for example, than which a more distressing affection it is hardly possible to conceive. Its wearisome persistence often maims many a woman morally, intellectually, and physically. Every man with anything of a practice can instance sad cases of this kind. Yet how little has been done for its relief. Mr. Baker Brown, whatever his defects may have been, was a man far in advance of his generation. He advocated a certain line of treatment which, on account of an utter want of tact and discrimination, brought a scandal upon the profession and led to his ruin His treatment shared in the obloquy which attached to its inventor and has not so far been revived. Yet in a certain class of cases it is a most valuable as it is a last resource, and I can call to mind several instances of lasting benefit from his operation. The scope and application of this procedure is a matter well worthy of the attention of this Society. Closely allied to this topic is the subject of diseases of the urethra in women. The subject is one which does not appear to me to have been properly worked out, but when we remember the intolerable irritation to which these affections can give rise in neighbouring structures it is obvious that they may often be responsible for many practices which medical men are but too apt to refer to purely moral causes. Surgeons are fond of filling their museums with captured hairpins, knitting needles, and the like, and scoffing at the unhappy victims of deplorable habits. Dr. Hermann was the first really to call attention to the frequency of strictures of the urethra in females, but the attendant symptoms have not been recognised in their integrity, or if recognised have not been dealt with. Diseases of the female urethra are still an uncut book, and I hope to do something towards clearing up this matter in the course of the year by a paper on the subject.

Passing on to consider the ethics of operative procedures, it must not be overlooked that, no matter how great the operator's skill or how perfect the recovery may be from the operation, the entire removal of an organ, even if diseased, is not the highest standard of the healing art. There are, of course, cases in which the prolongation of life or the relief of intolerable suffering may justify such removal; but these cases ought always to be regarded by medical men with a feeling of humiliation and not of pride, for our object would better have been achieved had we, by timely interference, prevented the morbid process proceeding to this length. The surgeon's success is the physician's reproach; and it must ever be our hope, by improved methods of diagnosis and earlier treatment, to save our patients from the surgeon however skilful. When the results in a large number of cases have been collected, and when their import comes to be considered, it does not require one to be much of a prophet to foresee a reaction. Surgery, I have said, is the opprobrium of medicine—not medicine that of surgery. The greatest operative skill that ever man possessed must pale before the discovery of a drug or of an agent which can arrest or destroy the effects of pathological changes. We are, I believe, on the threshold of great discoveries. Another century will not pass without increasing our therapeutical resources at the expense of the surgeon's art. Which, to quote a homely example, is the higher art—to prevent the decay of a tooth or to provide for its extraction when too dilapidated to be any longer useful? Surgery and pathology are handmaids to remind us of what has still to be accomplished in the prophylaxis and cure of disease.

Another wide field for useful observation lies in the systemic inquiry into the after-effects of some of the operations which have of late years come so much into vogue. Dr. Robert Barnes led off with a very interesting and instructive paper dealing with the mental and functional disturbance arising after removal of the uterus or its appendages. It has been my own experience to meet with many instances in which the sufferings have not been diminished, or have even been exaggerated. Many patients speak of the shock they experienced after the operation, and the long time it took them to recover from the nervous disturbance. In two cases under my immediate observation wasting paralysis supervened, one of the arm and the other of the leg, both being on the left side.

In making these remarks I am not of course alluding to the removal of organs which are the seat of growths necessitating their ablation, but to cases in which the most prominent symptom was constant pelvic pain—cases in which the suffering has been so severe that the patients have been led to seek relief at the hands of the surgeon, acting against the advice of their medical men. Now I see a good deal of these post-operative cases. The surgeon does his best, and when this fails to afford the anticipated relief, then these derelicts, sorely disappointed, come to non-operators to see what remains to be done. Cases of this kind in which no relief has followed I have met with; and these cases have not been drawn from the practice of any one man, nor indeed from the operators of any one country, so that my remarks apply to principles and not to practices. It seems to me that what we want is a carefully collated history of a number of such cases, with special reference to inherited constitutional tendencies and conditions of environment. Properly handled, such a collection would prove invaluable as a guide to practitioners when advocating operative procedure for the relief of this kind of suffering.

The lateness of the hour prevents my touching upon the question of the influence of antiseptics during parturition. I believe it will be found that antiseptics have revolutionised the rules of obstetric practice and the treatment of the complications of child-bed. I regret to see how little has been done towards the amelioration of the sufferings of child-bed. I hope some members of the Society will, during the coming year, bring forward papers on this subject.

POST-GRADUATE COURSE AT QUEEN'S COLLEGE, BIRMINGHAM.

TWO LECTURES ON THE GENERAL PATHOLOGY OF TUBERCLE, WITH ESPECIAL REFERENCE TO THE QUESTION OF INFECTION.*

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GENTLEMEN—

In the time at our disposal it is not possible always to give in full detail the arguments upon which some of my statements are founded, and, as a result, it may appear that my observations are more dogmatic than is appropriate when addressing a post-graduate class. The busy life you lead, however, prohibits me from making undue demands upon your time, and as an excuse for observations that may savour of dogmatism I may plead that I make them only after careful thought and examination of the work that has been done on tuberculosis during the last eight years. When possible, I shall give references to the original papers in which any point has been elucidated, so that those desiring to do so may weigh the evidence for themselves. My first task to-day must be to define what I mean by tuberculosis, and definitions, as you know, are proverbially difficult and unsatisfactory, and none the less so when we have to include in a terse description very various clinical conditions.

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* The Lectures were illustrated by the aid of Photographs and the Lantern. For the loan of many of the Photographs the Lecturer is indebted to Mr. Watson Cheyne.

Tuberculosis, then, may be defined as an infective disease due to a specific virus, the tubercle bacillus, the presence of which in the tissues sets up a chronic inflammation. You will observe that this definition is a very general one, and that three points are put prominently forward. They are that tuberculosis is infective, that it is due to a specific poison (the tubercle bacillus), and that the bacillus excites inflammation. The importance of establishing the first two points is so great that they will necessarily occupy most of my first two lectures. Before however proceeding to discuss them, it is necessary to devote a little time to the tubercles which have so long been identified as characteristic of tuberculosis.

I said just now that the tubercle bacillus sets up a chronic inflammation in the tissues, and it is these chronic inflammatory products, aggregated usually into small nodules—recognised generally as tubercles—from which the name tuberculosis is derived. It is however very important to bear in mind that the chronic inflammatory products may take the form of an "infiltration" rather than that of well-defined nodules or tubercles; and this is particularly so in bone and synovial membrane, as has been pointed out by Mr. Watson Cheyne in his admirable lecture at the College of Surgeons. This "infiltration" is not so easily recognised as the orthodox tubercle, and it may, by the naked eye, be overlooked.

The tubercles are found in varying conditions; sometimes, in the early stages, in small, greyish, semi-translucent nodules, known as grey miliary tubercles, scattered widely through the viscera; at others, as the yellow tubercle—that is, the first variety which has undergone caseative necrosis. Sometimes the tubercles are tiny masses, none larger than a pea; at others, they may be aggregated into a well-defined mass the size of a pigeon's egg; or, as in synovial membrane, a gelatinous thickening of the part may be found, in which the unaided eye can detect no definite nodules or tubercles; and, lastly, the appearance of any tubercular formation may be greatly changed by a process of softening supervening on caseation, or else calcification may occur.

Remembering, then, that the inflammatory cells are sometimes found as tubercles, at others as an "infiltration," we proceed to the histology of these conditions. With ordinary powers of the microscope and ordinary staining methods, the inflammatory formations in tuberculosis are found to consist in the main of three varieties of cells—giant cells, epithelioid cells, and leucocytes. All these cells are found in what may be called a typical tubercle, the giant cell or cells in the centre, the numerous epithelioid cells surrounding these, and again more externally a zone of leucocytes; but it does not follow that all tubercular tissue contains giant cells. In addition, there is sometimes a slight fibrillar matrix in between the cells, but rarely is there any distinct vascular supply. These cells are the result of the irritation of the tissue by the bacilli, or by the products formed in their growth; the intrusion of the micro-organism is resented by the tissues, and that resentment is expressed by a cellular hyperplasia. In these cells *individually* there is nothing that is *absolutely* characteristic of tubercle, but when one sees them aggregated into a regular nodule and presenting the appearance shewn in the photographs, one has little doubt of the presence of tuberculosis. (Numerous photographs were here shewn.)

The one thing that is needed to establish positively the existence of tuberculosis is the presence of the bacillus, which is to be found only by special methods of staining, to be described later on. If the bacillus, then, be found associated with all or some of the various cell elements mentioned above, however diverse the lesions may appear to the naked eye, and however much the clinical characters may vary, the diseased condition must be classified as a tuberculosis. It is the remarkable diversity of the tubercular lesions in appearance, together with the extreme variations in the course the disease runs when different parts are affected and the different degrees of danger implied to the life of the individual affected, that makes it so difficult to accept the *unity* of the tubercular lesions. For example, contrast the naked eye appearance of this tubercular tumour of the brain with what is seen in the lung and in this kidney and in this epididymis, and one is struck by the varying appearances shewn in the different parts.

Again, contrast the rapid dissemination and death in a case of acute general tuberculosis with what occurs in the ordinary tubercular gland affections. In the one we have a general disease infecting all the viscera very rapidly, well-marked tubercles being found widely distributed, and the patient's life brought to an end in a few weeks; in the other we have a few lymphatic glands in the neck affected, and subsiding in a year without having infected distant parts or produced even an abscess or in any way seriously damaged the patient.. Standing half way between the two extremes we have cases of tuberculosis of the lungs existing for years, producing slow destruction of the organs, and eventually wearing out the patient's life by the chronic suppurative process induced in the lungs.

What I have referred to as "the unity of tubercular lesions" has been worked out with infinite toil by pathological observations, aided by experimental observations on animals. The connecting link is the constant presence of the tubercle bacillus, which can be demonstrated in all tubercular lesions, which can be obtained from them by cultivation, and which thus obtained can be used with certainty to set up the disease anew in animals.

Clinically we are frequently reminded, sometimes quite tragically, of the connection there is between the most acute and the most chronic and apparently unimportant lesions of tuberculosis, and we are not allowed to forget that the latter always contain the potentiality of the former. A man is affected with tuberculosis of the epididymis for years, the trouble so quiet that he has forgotten it, when suddenly an acute tubercular meningitis arises which ends his life in two or three weeks; or a child with a little tubercular osteitis of a metacarpal bone or a caseous tubercular gland suddenly develops acute general tuberculosis, or a lupus which has existed for years eventually lights up a pulmonary tuberculosis which runs a course of months only.

We have recently received important evidence pointing to the unity of all tubercular processes by the method of treatment published by Dr. Koch. Whatever the lesion may be, whether tubercle of the skin (lupus) or of a lymphatic gland, or of a synovial membrane, or of the lung, the injection of Koch's fluid gives rise, practically always, to characteristic constitutional and local changes, the constitutional consisting in the usual phenomena of fever, and the local changes in swelling, heat, and, when it can be seen, in redness. Not only do these conditions arise in tubercular lesions, but they appear rarely in any other disease.

Although I have dwelt thus at length on the identity of all tubercular lesions I do not for one instant mean to assert that tubercle in different individuals, or in different parts of the same individual, is of the same lethal significance or that it always tends to the same local destructive effects. It is as essential that we should study the life history of tubercle in different parts and different tissues of the body, as it is that we should make out the extreme differences between epithelioma of the lip and the same disease in the tongue, or between a periosteal sarcoma of the femur and a similar growth in the radius; as everyone knows or should know the significance of these growths of different parts varies greatly, and so it is with the formations in tuberculosis.

I have already said that the one necessary point to be established before any lesion is regarded as tubercular is that it contains the tubercle bacillus. In searching for this it is necessary to resort to special methods of staining; these may vary in small details, and many modifications have been suggested since Koch's original plan was published, but the details will be more appropriately explained at the practical classes. I propose here only to explain the general principles; they are that the bacillus is effectively stained only by the aniline dyes in the presence of an alkali; that the organism resists the penetration of even this stain for some time, but once it has taken up the stain it holds it very tenaciously. To take an example:—A definite proportion of the red colour fuchsin is dissolved in an alkaline solution, and the tubercular matter is placed in contact with the stain thus made. For bacilli in sections it is advisable that the staining process should be continued for some hours, in material such as sputum or pus. The staining may be considerably curtailed, especially if the staining fluid be warmed, and for clinical purposes a few minutes is sufficient.

We now have the whole section or layer of sputum coloured red, and the stained material is exposed for a brief period to the action of a rather strong acid and subsequently is washed in alcohol. The effect of this is to remove the red stain from practically everything but the bacilli which, as I have already mentioned, hold their stain tenaciously once they have received it. For convenience of examination it is usual to employ what is known as a counter stain, for example, methylene blue. A dilute solution of this stain is applied to the section or sputum, and the material (with the exception of the bacilli which are still red) absorbs the blue stain. The specimen is then mounted in the usual way for examination by the microscope. For this examination a good lens, an 8th or a 10th is desirable, or what is still better, a 12th oil immersion; and it is of advantage, indeed in some cases a necessity, that a special illumination of the specimen shall be made by an Abbe's substage condenser or some similar arrangement, the advantage gained being that the structure picture is obscured and the colour picture well brought out, the stained bacilli being thus more readily discovered.

The bacillus is rod-shaped, in length about $\frac{1}{7000}$ of an inch (somewhat less than half the diameter of a red blood corpuscle) and it is generally somewhat bent, sometimes distinctly curved. With high powers of the microscope, a 12th oil immersion, or with a first rate 8th or 10th, the bacillus is sometimes seen to be distinctly nodular, the appearance being probably due to spores by means of which the organism is reproduced. The spores resist staining even more strongly than the rest of the bacillus, we thus have parts of the rod-shaped body stained and part unstained, the effect being sometimes to give the appearance of a chain of micro-cocci. So far as is known at present the tubercle bacillus has no power of independent movement, and it is either carried passively by the blood or lymph stream, once it has found its way into those channels by the breaking down of the tubercle; or it is taken up into the interior of a wandering cell or leucocyte and transported into the tissues by the migrations of its host.

The number of bacilli found in any tubercular tissue may vary greatly, the variations depending upon whether the tubercular lesion is acute or chronic and slowly advancing. The age and amount of degeneration in the tubercular matter also influences the number of bacilli seen. In a section of lung from a case of acute tuberculosis the number of bacilli in a field may be counted by thousands; in a section from a tubercular tumour of the brain half a dozen may be found in a field; and in lupus it may be necessary to examine half a dozen sections or more before finding a single bacillus.

The bacilli are found most readily where the tubercular process is spreading, and should be looked for especially in the interior of the giant cells or epithelioid cells, though they are often found between rather than within them; and this is especially so in the more acute manifestations. If the portion under examination should be caseous, no bacilli may be found; yet this material, when inoculated into animals, gives rise to tuberculosis, the explanation being that the caseous matter contains the spores of bacilli which have broken up; the spores, though not staining, yet have the power of giving birth to fresh bacilli.

Koch's original papers shewed that whether the part examined was a tuberculous lung, gland, bone or joint, or a tubercular ulcer of the tongue or bladder, or lupus, the bacillus was found—and this has been confirmed over and over again by others—whilst sections from other and non-tuberculous diseases failed to shew tubercle bacilli. (Numerous photographs of bacilli were here shewn.)

The only micro-organism closely resembling the tubercle bacillus is that found in leprosy, which is similar in appearance, and is capable of being stained in a like manner; but it is differentiated from the former by cultivation, and practically it is of little importance to us owing to the rarity of leprosy in this country.

Whilst the characters of the tubercle bacillus which I have related are amply sufficient to enable us to recognise it in any suspected material, before it can be accepted that this bacillus is the absolute cause of the disease, it is necessary to do much more than simply to shew its presence in tubercular lesions. It must, in addition, be possible to cultivate in material outside the body the micro-organism already identified by staining, etc. When the micro-organism thus separated by cultivation is introduced into the body of another susceptible animal, it must there multiply and produce tuberculosis; and on examination of the diseased tissues by staining and the microscope, the same micro-organism must be identified that was found in the original tubercular lesion.

All this has been done in the first instance by Koch, and has been confirmed by other observers; and it is now my purpose to place concisely before you the steps by which these conclusions have been arrived at. And to those who wish to study the matter at length, I will recommend Koch's admirable and exhaustive paper on the "Etiology of Tuberculosis," translated by Mr. Stanley Boyd, in a work published by the New Sydenham Society in 1886, and titled "Micro-parasites in Disease."

Now to describe briefly that most important point the method of cultivation of the tubercle bacillus. You are all familiar with the fact that it is possible to grow on suitable material various germs—the yeast fungus, for instance, in a solution of sugar from malt, the various moulds on certain kinds of cheese. What happens in these every-day rough and ready sort of ways is carried out more carefully and with greater precision in the case of many germs capable of producing disease in man and animals. Some of these germs or micro-organisms will grow on bread, some on potato, others on gelatine-peptone, and so on; some cannot be cultivated at all—for instance, the bacillus of leprosy. Some of these micro-organisms — the anthrax bacillus, for instance — will grow on almost any medium or cultivation material, and others are very selective. This is especially the case with the tubercle bacillus. The best medium on which it can be grown is blood serum prepared as follows:—An animal is bled into a sterilised glass vessel, and when coagulation has occurred, the serum is removed by a pipette and placed in test tubes, which are filled about one-third full. To ensure this serum being sterile and non-infected by germs in the air, etc., the test tubes are plugged with cotton wool and are placed in this steam steriliser and heated for several successive days for an hour each day to a temperature of 58° C. This does not damage the serum for our purpose, and it destroys any accidental infection from extraneous sources. The serum is then coagulated by exposure to a temperature of 65° C. for about an hour, the test tubes being sloped so as to make as large a surface as possible for inoculation, as you see in these tubes sent round.

The inoculation of the serum is performed as follows:—As soon as possible after the death of a tuberculous animal or the removal of a piece of tuberculous tissue, the part affected is exposed with properly sterilised instruments, and a portion of the tubercular matter conveyed by means of a sterilised platinum wire on to the surface of serum, in a tube, and there spread out as I here shew you. Now you may imagine all is ready for the bacilli in the tubercular matter to commence their growth on the serum. Not yet; the bacillus is not only select in its feeding, but it requires a temperature maintained pretty constantly at our body heat for days before growth visible to the naked eye takes place on the serum. The inoculated tube is therefore placed in an incubator, such as I shew here, and the temperature maintained at 100° F. by means of a gas regulator and thermometer. If the temperature rises above 106° or falls below 86°, growth ceases. The temperature, then, being maintained at about 100° F. for some eight or ten days, small whitish points and grains appear on the surface of the serum; these are presently more distinct as tiny dry scales. The appearances vary slightly according to the solidity of the serum and the acuteness of the lesion from which the cultivation was started. At the end of about four weeks any particular cultivation ceases to develop, but from it other test tubes may be inoculated and successive cultivations kept going *ad infinitum*. In addition to the scaly appearance of the cultivation to the naked eye, the colonies of bacilli, examined under a low power of the microscope, present characteristic groupings in the shape of strongly curved lines like the letter S, and somewhat spindle-shaped, thicker in the middle and tapering at the ends (see diagram); and under a much higher power the individual bacilli, when stained, can be easily recognised. (The photograph now on the screen is from a cultivation on agar-agar which had been carried on for seven generations.)

It is now necessary to shew that these bacilli provided by cultivation, when introduced into healthy animals, set up tuberculosis invariably; but it is necessary to use, for experiment, animals which are really capable of becoming tuberculous, and the most suitable are guinea-pigs and rabbits, both of which are very susceptible to the disease, whereas dogs or cats are much less so; and, as shewing the curious selective power of the disease, it is worth mentioning that field mice readily fall victims to it, whereas white mice have an almost complete immunity. I dwell upon this question of susceptibility because at this juncture it is very important—a fact which is illustrated by reminding you of the difficulty in inoculating syphilis into the lower animals, whilst everyone knows that in the susceptible human subject infection is easily produced.

In the experiments about to be mentioned from Koch's report, cultivations of tubercle bacilli on blood serum were used; and in all of them, just to shew that the blood serum had nothing to do with producing tuberculosis, some of the animals had simply blood serum without bacilli introduced into them without any effect whatever. These are known as control experiments. The first experiment I relate is inoculation from a cultivation made from tubercle in the human being, the bacilli being taken from the fifth generation of test tubes inoculated. Six healthy guinea pigs were selected, and four of them were inoculated in the subcutaneous tissue of the abdominal wall; in fourteen days there was swelling of the inguinal glands, and ulceration occurred in the seat of inoculation; on the thirty-second day one of the guinea pigs died, and three dāys later the remaining five were killed. All the animals inoculated shewed extensive tuberculosis, the two not inoculated remaining healthy. Numerous other cultivations from various tubercular lesions gave similar results. Amongst them I may mention a cultivation from lupus, which was kept going for 'twelve months in test tubes, and then, when inoculated, the bacilli proved as virulent as those from any other source. These inoculation experiments could be watched with great exactness when the bacilli were introduced into the anterior chamber of the eye of a rabbit, the development of the tubercular nodules on the iris being easily seen; and it is important here to mention that the tubercular disease was much more acute and rapid when a large number of bacilli were injected than in those cases where only a few were introduced. Other infections were produced by injecting some of the cultivated bacilli into the peritoneal cavity of various animals, some of them, such as guinea pigs, dying of an intensely rapid tuberculosis; others, such as dogs and rats, living for months before they succumbed. It was, however, when introduced directly into the venous circulation that the most rapid and certain infection was produced, and a condition was induced resembling closely that which obtains in the most acute miliary tuberculosis in the human subject.

The method of infection which will be of the greatest interest to you though is that by inhaling the bacilli. In a large loose box were placed eight rabbits, ten guinea-pigs, four rats, and four mice, and into this box a spray was made to play, the reservoir of which contained a mixture of tubercle bacilli and distilled water. The animals were exposed to the spray on three successive days for half an hour each day, and after the inhalations were finished the subjects of experiment were kept in separate roomy cages and well looked after. Symptoms appeared in some of the animals in ten days time, and nearly half the rabbits and guinea pigs had died by the twenty-fifth day, whilst the remainder were killed three days later; in every instance the animals were found to be tuberculous. (Some photographs lent by Mr. Watson Cheyne were here shewn to illustrate experimental infection of joints.)

It is convenient here to mention that several experimenters have used ordinary tubercle from lung and other organs for the purpose of inoculating or otherwise infecting animals, and the proof is overwhelming that tuberculosis can thus be set up.

Accepting then the proposition that tubercle bacilli *alone* can give rise to tuberculosis, the question which next meets us is, whence come the bacilli? Must they be obtained from the body of some man or animal that has already fallen a victim to the disease, or can they arise *de novo*, or do they develop from some other micro-organism?

Whilst it is perfectly certain that many bacteria concerned in producing disease can flourish outside the human or animal body on putrefying animal and vegetable matter, it is equally clear that the tubercle bacillus cannot do so. It requires first of all a very special nourishment; secondly it needs a constant temperature of at least 86° Fahrenheit to enable it to grow; and supposing both the above conditions complied with, the tubercle bacillus would, owing to its slow development, be stifled and overrun by the more rapid developing bacteria around it and its growth would be choked, as has been established in artificial cultivations.

The next point is, do they arise *de novo*? that is, do we accept spontaneous generation? In answer to this enquiry I may say that there is not a tittle of reliable evidence to shew that this is possible. Lastly, do other bacteria develop into tubercle bacilli? Although it has been assumed that this is possible no facts support it whilst there are many against it; for example, no such transformation has been established in the case of other bacteria. Again, cultivations of tubercle bacilli for two years on blood serum have failed to shew any deviations in the naked eye appearances of the cultivations, in the microscope and staining characters of the bacilli, or in their virulence when inoculated.

We may take it that once the tubercle bacillus is expelled from the body of man or animal it either dies or lies dormant until again taken up into the body of another host; and seeing that in the living tissues spore formations occur, and so the cycle of its existence is completed and provided for, one may regard the tubercle bacillus as leading a purely parasitic existence. There is comfort in the fact that there exist such checks to the development of this powerful infection as are implied in the demand for special food and temperature before it can grow; but as a set off against these requirements we find that the bacillus and its spores are decidedly resistant to destructive changes; that to kill them extreme heat and cold are necessary; that sputum containing them may be dried for six months or allowed to putrefy for six weeks without destroying their virulence if they be used for inoculation.

I think we may believe without hesitation that the tubercle bacillus is the cause of tuberculosis, and that when man or brute becomes the subject of the disease it is owing to the entrance into the body of tubercle bacilli which have been set free from some other man or brute.

So far all that I have said on the question of infection has been devoted to experimental observations on animals, of which you may be rather tired, so I turn to what one may call the clinical evidence; and I should like to remind you that one positive observation fully described and made by a reliable observer ought to outweigh a number of negative observations.

The first point I wish to elucidate is whether one human being can be inoculated either directly from another or indirectly by means of the sputum coming in contact with a wound.

Here is a case in point, reported by Elsenberg (*Berlin. klin. Woch.*, No. 35, 1886). A child, born September, 1885, of healthy parents, was circumcised on the eighth day, the wound being sucked two or three times. Suppuration followed, and two months after the operation the wound had increased in size and the inguinal glands had swelled. When first seen, on Feb. 28th, 1886, at the seat of operation there was an ulcer covered with thick yellow exudation, and there was an infiltration into the prepuce; the edges of the foreskin were thick and rigid from infiltration, and there was undermining of the outer layer. The inguinal glands on both sides were very large, and especially on the left side, where they had broken down. There was also an abscess behind the left ear. The child died March 12th, 1886, but no *post mortem* examination could be obtained. Examination of the foreskin and glands, however, shewed typical tubercular structure and the presence of tubercle bacilli. Examination of the operator shewed that he was suffering from a cough, that he had tubercle of the larynx, and that he had phthisis of the left apex, his sputum containing tubercle bacilli. Elsenberg states that he has had three other patients under his care inoculated in a similar manner; and Eve, of the London Hospital (*Lancet*, vol. i., 1888), has recorded some cases similarly infected, as have other observers.

Here is a case, in which the inoculation was indirect, related by Tchering (*Fortschrift der Med.*, 1885). A woman, aged 24, nursed her employer, who died of phthisis. A few days before his death she wounded her third finger by breaking his sputum pot. Fourteen days later a whitlow appeared, which did not suppurate but left a painful and œdematous induration, and this was erased with a sharp spoon. Some time after, the pain, swelling, interference with movement, the thickening of the tendon sheath, and the enlargement of epitrochlear and axillary glands determined Professor Studzgard to operate. The middle finger, the sheath of the tendon, and the glands were removed, tubercle structure and bacilli being found in them. The patient was well two months after.

Pfeiffer *(Zeitschrift für Hygiene*, vol. iii.), quoted by Heron, relates the case of a veterinary surgeon who wounded himself whilst making a *post mortem* examination of a tuberculous cow. As a consequence, he developed local and, later on, lung tubercle. Tubercle bacilli were found both in the *post mortem* wound and in the lung lesions.

I could quote many other similar instances, but want of time forbids; and in my lecture on tubercular skin lesions I shall refer again to the question of surface inoculation.

There is only one other point to which I will allude here, and it is to the possibility of auto-infection The bacilli, separated at one point of the body and on the way to be expelled, inoculate on their way the passage by which they travel. Examples of this are seen in secondary affections of the larynx in cases of phthisis, of the bladder in tuberculous kidney, of the intestines in patients who swallow their tuberculous expectoration. These auto-inoculations of themselves point strongly to the infectivity of tubercle.

I turn now to another possible source of infection, viz., to the use of the flesh and milk of tuberculous animals. To anyone who would like to look fully into this matter I would recommend the book on "The Propagation of Tuberculosis," by Lydtin, Fleming, and Hertsen. London: Baillière, Tindall, and Cox. It is of course impossible to get such positive evidence of infection in these ways as it is by the skin, for we cannot see the initial lesion produced, and often the source of the infection cannot be traced.

The following case, quoted by Heron ("Evidence of Communicability of Consumption"—London: Longmans & Co.—in the Appendix), is of great interest. A healthy infant, without hereditary tendency to tuberculosis, was fed on the unboiled milk of a certain cow. The child became thin, shewed symptoms of inflammation of the bowels, and died in four months. *Post mortem* there was disclosed marked tubercle of the mesenteric glands. The cow was at once slaughtered, and at the *post mortem* advanced tubercle of the lung was found, and in the milk contained in the udder tubercle bacilli were discovered.

From the same observer Heron also quotes a collection of four cases of children under observation at the Jenner Children's Hospital, in Berne, 1882, all of whom suffered from abdominal phthisis after consuming the uncooked milk of a tuberculous cow.

From the reports of the same hospital another case is mentioned. An infant, the child of healthy parents, was suckled by his mother during the first five months of his life, and was subsequently fed on milk from one cow, the milk being only warmed, not cooked. The child died of tubercle of the intestine and mesenteric glands, the lungs, meninges, and other organs being healthy. During the same summer the cow also died, and was found to have extensive tubercle of the lungs and pleura.

That infection is undoubtedly conveyed to animals by their eating flesh and milk from tuberculous sources admits of no doubt whatever. Johne (*Deutsche Zeitschrift für Thiermedicin*, 1883) gives most positive results from experiments on alimentation. Of 117 animals fed with raw *tuberculous matter* from a heifer, over 60 per cent. became infected ; of 46 fed with the *raw flesh* of tuberculous cows, 13 per cent. were infected ; and of 91 fed with *milk* from tuberculous cows, over 30 per cent. were infected.

These experiments have been confirmed by Gerlach, Bollinger, and others, and I think we may formulate these conclusions :—

1. If animals are fed on raw tuberculous matter, such as mesenteric glands, over 50 per cent. become infected.

2. If they are fed on uncooked flesh from a tuberculous animal, though no tubercles can be recognised in the flesh eaten, infec-

tion may still take place, though with much less frequency than in the last case.

3. If the tuberculous material or the flesh be ***thoroughly*** cooked the risk of infection is greatly diminished if not abolished.

4. Animals fed on uncooked milk from tuberculous cows become infected, but not in the majority of cases.

5. Boiling the milk may destroy the chance of infection by killing the bacilli, but if spores are present simply boiling is not sufficient to destroy them and the milk is dangerous.

It has been pretty generally believed that for the milk of tuberculous cows to be infective the udder itself must be tuberculous; that part being healthy, no danger of infection exists. Unfortunately we must now regard this as incorrect.

Observations made by Hirschberger and Bollinger seem quite conclusive. They removed the udders of cows just slaughtered and drawing milk from the ducts by means of a syringe they injected it into the abdominal cavity of guinea-pigs. In the case of nine cows, suffering from tuberculosis of the lungs only, in three instances positive results were obtained from the inoculations, and in six negative results. The result however is amply sufficient to shew that milk from an animal may be infectious when the disease is localised to a part other than the udder. (See Heron).

In milk taken from a tuberculous udder the danger is much greater, for it is possible in such milk to demonstrate a large number of bacilli. On this question there is some very interesting information in a pamphlet by McFadyean and Woodhead on "Micro-parasites of the Domesticated Animals."

It is worth while in connection with the use of milk from tuberculous cows to recall to your minds the large number of children under a year old who die of tubercular disease of the abdominal lymphatic glands. This is a matter that has not yet been thoroughly threshed out, and I recommend it as a subject well worth investigation to anyone who is seeking one.

I must now ask your attention to a matter of the greatest importance. So far I have not touched upon the possibility of human tuberculosis being conveyed from one person to another by the inhalation of bacilli. Direct evidence of infection in this way is difficult to obtain, mainly from two causes. Assuming that tubercle bacilli *can* infect when inhaled into the lungs, the numerous occasions on which this may occur prevent us from identifying the particular time at which the bacillus is inhaled; and when infection has actually been produced it may be months before the disease has made such progress as to attract the patient's attention to his condition, and at such a distant time it is useless to attempt to trace the infection in the majority of cases.

It has been proved, I think, beyond reasonable doubt that animals may be infected if they are placed in a limited space and made to inhale a spray containing bacilli or broken up tubercular matter. But those who do not believe in the possibility of infection, argue that the conditions in these experiments are not analogous to what obtains in the every-day life of human beings, so we must seek evidence of infection of a different kind. Many of us have probably been struck by the fact that a phthisical person introduced into a previously healthy household may be the forerunner of phthisis in those previously healthy. A very striking case of this kind is recorded by Ogston. One son out of a healthy family of ten persons who had no hereditary taint, contracted consumption abroad and returned home to be nursed. His two sisters, who nursed him, and a brother, who shared his room and slept with him, all died of consumption, as did the patient; whilst the parents and four other sons remained healthy. Other cases similar to this might be quoted.

I will now remind you of those cases in which phthisis arises in healthy persons thrown in contact with those who are not blood relations. I know of nothing more convincing than the cases published by Dr. Hermann Weber in the Clinical Society's Transactions, 1874. He mentions that he has the history of sixty-eight persons, male and female, who, with a more or less consumptive taint, married healthy partners. In ten out of these sixty-eight cases one or several of the partners became consumptive. When, however, we examine the cases more closely, it appears that there were thirty-nine husbands who were consumptive, and in the case of nine of them the wives became diseased. Of these nine husbands one lost four wives, one lost three, four lost two each, and three lost one each—all of them from consumption—and in every case the wives were free from consumption, as far as is known, at the time of marriage, and had almost invariably a family history free from tubercular tendency.

Dr. Wade has kindly furnished me with another example. A Miss ——, aged 20, left Birmingham in January, 1888, to live in the country. She found existence there very dull, and she felt depressed and listless, but presented no symptoms of disease. About March, a girl reputed to have phthisis came to stay with her, and shared the same bed. About six weeks after, Miss —— began to lose flesh, to have a cough, and in a little time grey expectoration. Later, there were physical signs of phthisis, and the sputum contained bacilli. The patient died in September, 1889.

Let us see whether comparative pathology supports the possibility of tuberculosis arising from inhaled bacilli. Veterinary observers hold strongly that rodents and bovines, when tuberculous, communicate the disease to healthy animals who are confined in the same building and feed out of the same manger. Here are two examples quoted in the book, edited by Lydtin, to which I have already referred.

"In the territory of Taunenkirch there was a farm let for three years to a man named Gugelmaier. An average of about a dozen cows, some heifers, and a bull were kept here, all lodged in the same stable. Four years ago the farmer bought a grey cow, which soon became emaciated; consequently it was killed, and it was then found to be affected with tuberculosis to a very high degree. Since the purchase of this cow Gugelmaier had lost ten other cattle from this disease, being obliged to kill some and to sell others. The following is the succession of losses in this farm:—Three cows in 1880, one in 1881, five in 1882, and one in 1883; and another animal, a fat heifer, when slaughtered was found to have a small number of tubercles."

Lydtin also reports the following:—"In 1875 the schoolmaster of Obersasbach occupied a farm and bought some cows, but in about four years he was compelled to give up farming because of the continual losses he sustained among his cows. The first he bought in 1878, but in 1879 he sold it to a butcher, and when slaughtered it was found to be highly tuberculous, so that it could not be used as food. The second cow was bought on January 2nd, 1879, and lived in the same stable as No. 1 for fifty-four days. It was sold to a butcher December 10th, 1880, who returned the carcase, as it was tuberculous to an extreme degree. A third cow was purchased on August 11th, 1879, and lived for four months with No. 2, and it was subsequently killed on account of tuberculosis. A fourth cow, purchased in 1880, lived for some time with No. 3, and was then sold, but was returned by the buyer as probably tuberculous. The first cow came from the stable of a neighbouring farmer whose herd was infected by tuberculosis, but the second, third, and fourth were, so far as is known, healthy at the time of purchase, and had not been exposed previously to infection. Further, the schoolmaster's stables were well kept, and the cows properly looked after."

An experiment of Koch's shews the possibility of guinea-pigs infecting one another in the way we are now discussing. He selected a number of healthy guinea-pigs. Some of them he infected with tubercle by inoculation, and then shut up with them in the same stable a number of the animals perfectly healthy and not inoculated. The result was that in three or four months' time these healthy animals became tuberculous, and *post mortem* examination shewed clearly that the disease had commenced in the lungs, and the only possible inference was that the disease started from bacilli inhaled from the destruction of tubercular lesions in the inoculated animals.

The cases and experiments I have quoted at least suggest the possibility of infection by the respiratory passages. But you may naturally enquire what evidence is there that tubercle bacilli are to be found in the atmosphere, and further whether they are still virulent? First of all as to the virulence. If animals be inoculated with tubercular sputum containing bacilli, even if it has been dried for weeks, tuberculosis is produced. As long as the sputum remains moist the bacilli are of course kept out of the atmosphere, but when a phthisical person of dirty habits expectorates about a room or in the streets, things are different. The expectoration then dries up and becomes distributed in tiny particles, which contain bacilli, on the furniture, carpets, or any other objects, where they can be discovered by proper methods of examination.

Dr. Cornet's experiments on this point are most positive. He proceeded as follows:—With perfectly sterile sponges he washed the walls or floor of a room or the furniture or whatever he wished to examine. From these sponges he inoculated broth, such as tubercle bacilli could grow upon, and if when this broth was injected into guinea-pigs they shewed symptoms of tuberculosis, he concluded that tubercle bacilli were present in the places examined in such numbers as to be a source of danger to animal life.

In twenty-one hospital wards where the majority of the patients were consumptive, fifteen of the wards yielded dust which in the way above mentioned produced tuberculosis. Examination of Lunatic Asylums and of private residences where consumptives had lived gave similar results, while other places, such as out-patient departments and surgical wards did not yield tuberculous dust, nor did he find bacilli in the rooms of consumptives who had been in the habit of collecting their expectoration in a spittoon instead of spitting on to the floor or into a handkerchief.

Whilst the sputum of phthisical patients is more than suspected of spreading disease it is improbable that the breath itself is a source of infection. Dr. Heron made several observations on this point, and he was unable to find tubercle bacilli in vessels into which phthisical persons simply breathed; if however coughing came on, although without definite expectoration, a few bacilli might occasionally be found.

I will not longer try your patience with details of this kind. The possible communicability of tuberculosis in the way I have suggested is for us and the public a question of the most vital importance, and necessarily the responsibility of arriving at a correct conclusion falls upon us. On a question of such magnitude I do not ask you to accept my judgment but to examine the evidence given in the works I have mentioned so that you may form your own conclusions; for myself I have arrived at the following:—That tuberculosis is occasionally conveyed to the human subject by external inoculation; that infection may occur occasionally by eating the flesh of a tubercular animal, but more commonly by the use of uncooked milk from such; and that the commonest method of infection is by the respiratory tract from some other human tuberculous subject; but for infection to take place the association between the healthy and the phthisical must be very close.

My reasons for the last conclusion are briefly as follows:—

(*a*) That in tuberculous man, from the lungs a large number of living bacilli are constantly being shed

(*b*) That these bacilli can live for weeks under adverse circumstances.

(*c*) That they are dispersed in a dry state with some freedom in the apartment occupied by a tubercular patient and hence may be inhaled.

(*d*) That animals made to inhale bacilli become tuberculous, the disease commencing in the lung.

(*e*) That in a large proportion of human tuberculous subjects the disease commences in the lungs, where, by inhalation, bacilli are necessarily located.

(*f*) That there are many cases of consumption which appear to be due to living with those affected by the disease.

It may be urged as a difficulty in accepting my last conclusion that if it be correct it would be impossible for a large proportion of people to escape phthisis who do remain healthy. I acknowledge this difficulty, and whilst insisting upon the tubercle bacillus as the absolute cause of tuberculosis I do not hesitate to say that there are circumstances which greatly modify its action and which explain to some extent the difficulties.

The first of these is an inherited tendency to tuberculosis, a proposition which most people are inclined to accept without hesitation and to support by quoting instances. This predisposition is however not so readily accepted now as it was a few years ago, those who reject it endeavouring to explain many of the instances where one case of phthisis in a family is the forerunner of others as examples simply of infection through constant exposure to the reception of bacilli. For myself, I accept fully this predisposition of the tissues and regard it as of great importance.

The second modifying circumstance is "the acquisition of a generally lowered state of nutrition," such as occurs in the alcoholic, the syphilitic, and in lunatics. I imagine that it is not possible to doubt the influence of such conditions as these in the production of phthisis.

The third modifying circumstance is a condition of "local damage" to a particular part or organ in which the bacillus first establishes itself. In the lung, for example, a catarrhal state may be the starting point of tubercular processes, in that bacilli lodged in a peripheral portion of lung may find material in which they can grow, and further are left undisturbed by the respiratory ebb and flow, which is interfered with by the narrowing of the smaller tubes from the existing catarrh. Again, in the larynx the repeated cough probably destroys the epithelium on some of the mucous membrane, these abrasions afford lodgment for bacilli which under normal circumstances would either be swept away by the ciliated epithelium or on a squamous surface would find unsuitable soil. In the knee joint a traumatic synovitis may precede the tubercular condition.

The relation between the exciting and the predisposing causes may be stated as follows:—Given all the predisposing causes, without the presence of the tubercle bacillus, and there will be no tuberculosis; given the predisposing causes, plus the presence of the tubercle bacillus, tuberculosis will pretty certainly be developed; given the tubercle bacillus, without the predisposing causes, and the development of tuberculosis is doubtful.

As a corollary of what I have said of the danger of using tuberculous food and milk and of the danger of infection from phthisical expectoration, it becomes necessary to say something of prophylaxis. The danger from tuberculous food and milk is to be met by a rigid inspection of slaughter-houses and meat markets. Any animal whose carcase was found to be infected with tubercle should be absolutely condemned as food, and should be burnt. Inspection of dairy cows, especially in the cow-sheds and byres of towns, should be systematically carried out, the inspectors being empowered to order the destruction of infected animals, reasonable compensation being in all cases provided for the owner.

With regard to the infection from phthisical expectoration, this danger can, to a very great extent, be provided against by insisting upon all phthisical sputum being received into proper vessels, the contents of which should be cremated, and at the same time the use of pocket-handkerchiefs and expectoration on the floor of buildings or elsewhere should be prohibited, the harm likely to arise from such a cause being pointed out to the patients. It would also be a wise precaution to cremate the fæces in cases where the alimentary tract is involved, so that the bacilli from such cases may not be distributed on a sewage farm or in similar ways.

It remains now only to say a few words on the relation of the term struma or scrofula to tuberculosis. Taking the terms struma and scrofula as being synonymous in the minds of those using them, I propose to employ the first only, to save confusion. Strumous, it is perfectly clear, is a term very often used to indicate a condition which is undoubtedly tubercular. For example, a so-called strumous gland in the neck is one which contains caseating tubercles, which contains bacilli, which is capable of giving another animal tuberculosis if inoculated into it. So it is with so-called strumous disease of the knee-joint, a tubercular disease either of bone or synovial membrane or both. Such conditions had better be referred to as tubercular; the term is fuller and more definite. Strumous is however used in a second sense, being commonly coupled with another word, and so we have the term strumous tendency. What is implied by this is that the subject of it is born with a natural weakness of tissue derived by inheritance from tuberculous ancestors, and that such an one is more vulnerable to the virus of tubercle than a healthy person.

It is not possible to do otherwise at present than to accept this strumous tendency as having a real significance, derived from the fact that those subject to it have an unusual tendency to catarrhal inflammation of the mucous membranes, and probably of joints and glands, and that on to these simple inflammatory changes the tubercular inflammation may be grafted, the bacillus finding conditions suitable to its development. Congenital tuberculosis is, as far as is known, very rare in the human subject, though I am told it is not so rare in bovines.

REPORTS OF CASES.

KOCH'S TREATMENT AT THE GENERAL HOSPITAL.

CASES AT THE JAFFRAY SUBURBAN HOSPITAL UNDER THE CARE OF DR. T. STACEY WILSON.

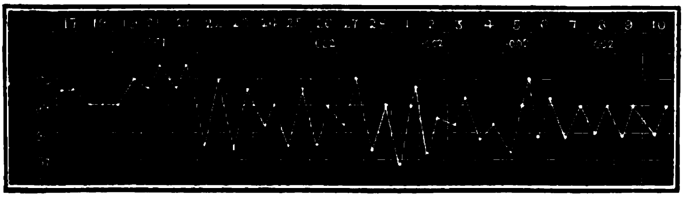
Case 1.—C. H., aged 24, ironworker, under the care of Dr. Saundby while in the General Hospital (*vide* February, 1891, Case 1), admitted to the Jaffray Hospital on February 27th, but it was not deemed wise to continue the injections on account of a severe attack of syncope, which may have been caused by pulmonary infarction as it was followed by some increase of crepitation over the left lung (but no pain) and by deeply and evenly blood-stained and coagulating sputa. The blood gradually disappeared and the sputa are now practically free from it. The amount of sputa has remained constant at 70 cc. since March 3rd, and the temperature has ranged about 97 in the morning and 99 in the evening. It seems likely that the beneficial effect of the injections he had at the General has been shewing itself during the pause in treatment. He has gained 2 lbs. during the last week and now weighs 8 st. 12 lbs. This may however only mean that he has made good the ground he lost in the above-mentioned attack.

The lungs now shew rather more numerous crepitations than formerly, and those heard over the dull area at the left apex are more indicative of a cavity. The ulcer at the base of the left vocal cord has once more broken down, but seems to be quite superficial. The injections have now been recommenced.

Case 2.—W. R., 52, stableman, under the care of Dr. Saundby at the General Hospital (*vide* Case 5, February, 1891), admitted February 6th after five weeks' treatment at the General Hospital, during which time he had eight injections, the last injection being of 2 cg., on Jan. 28th. The injections were discontinued on account of his general condition being very unsatisfactory.

On Feb. 6th he weighed 7st. 6½ lbs., was bringing up about 3 or 4 ℥ (= 80 to 110 cc.) of frothy muco-purulent expectoration per diem, was sweating a little at night, his appetite was poor, his cough troublesome, and his voice hoarse from slight thickening of the mucous membrane of the post-laryngeal wall. His chest shewed few physical signs at the apices except some flattening and slight deficiency of resonance and movement, with a few crepitations, but there were signs of a little consolidation at the base of the left upper lobe and some general bronchitis. For the first two weeks he was treated simply with cod liver oil and maltine and a generous diet, and improved steadily, gaining about 2 lbs. per week. The sputa began to diminish in amount after a week or so (being as little as 70 cc. once or twice), but were much increased in amount and the patient was considerably upset by the fogs that occurred about the 18th of the month. The larynx also began to get more troublesome, and shewed some ulceration commencing, and there were rather abundant crepitations throughout both lungs. These symptoms seemed to call for a renewal of the injection treatment, which was begun on the 20th with a dose of 1 mg., and the dose was not increased above 2 mg., as this was found to produce a slight reaction (shewn more by an increase and then decrease in the sputa after each injection than by the temperature), and this was held to be sufficient. During the continuance of these small doses at considerable intervals, the sputa diminished in eighteen days from 70 or 100 to 20 or 30, the temperature, from ranging about 100 in the evening to 99 in the morning, became regularly 98 in the morning and 99 at night, and the patient gained weight steadily at the rate of more than 4 lbs. per week, shewing a total gain of. 10¾ lbs. during the eighteen days of injection. Thus during his five weeks' stay at the Jaffray Hospital he has gained 1 st. 1 lb.

These facts speak for themselves. But it is interesting to note that the apices of the lungs seem to be more resonant than formerly, and that the crepitation has gone. At the base of the L. upper lobe the signs are less marked, and the rest of the lungs is clear. The larynx still shews active changes going on, and there is more swelling than formerly of the posterior wall, but less of the false cords. The ulcer is still suppurating; the night sweats have gone. Thus we have in this case every reason to be satisfied with the result of Koch's remedy. The following are the details of the case:—



Date.	*Injection.*	*Sputa.*	*Weight.*	*Date.*	*Injection.*	*Sputa.*	*Weight.*
Feb. 18		113 cc.	7st. 9¾lb.	Mar. 1		63 cc.	
„ 19		70 „		„ 2	.002	42 „	
„ 20	.001	70 „		„ 3		56 „	
„ 21		106 „		„ 4		35 „	8st. 3½lb.
„ 22		113 „		„ 5		20 „	
„ 23		113 „		„ 6	·002	28 „	
„ 24		70 „	7st. 12½lb.	„ 7		42 „	
„ 25		56 „		„ 8		28 „	
„ 26	·002	70 „		„ 9	·002	20 „	
„ 27		70 „		„ 10		28 „	8st. 7½lb.
„ 28		46 „					

Case 3.—J. B., male, aged 36, a grinder, admitted to the General Hospital on Feb. 9th, and to the Jaffray Hospital on Feb. 13th, 1891. There was a strong hereditary tendency to phthisis, his father, two paternal uncles, and a paternal aunt having died of that disease. His mother died, aged 60, from pleurisy. Patient, though not a strong man, had no illness till six months ago, when he began to suffer from loss of appetite and other dyspeptic symptoms. He gradually got worse, and on admission complained of pain (probably pleuritic) in the left side, a hacking cough and blood-stained sputa, and night sweats. There was some consolidation of the apex of the left lung and some crepitation. On the right side there was merely a slight deficiency of movement and resonance. There was also a narrow band of consolidation involving the lower border of the left upper lobe in the axillary area.

During the first week the patient lost ¾ lb. in weight, but during his first week at the Jaffray Hospital he gained 3 lbs. The condition of his chest, however, shewed no change, and the sputa, which were muco-purulent and blood-stained, remained constant in amount and character, varying between 21 and 28 cc. per diem. The first injection was given on February 26th; the dose was one milligramme, and it gave a temperature reaction of 2° F. and increased the sputa from 28 to 35 cc. The same dose was repeated every fourth day (*i. e.*, leaving three clear days' interval), and it sufficed to produce some effect on the temperature and also, what seems of more importance in these cases, a slight reactionary increase of the sputa. This is shewn below.

Date.	*Injection.*	*Sputa.*	*Date.*	*Injection.*	*Sputa.*
Feb. 26	·001	28 cc.	Mar. 6		17 cc.
„ 27		35½ „	„ 7		7 „
„ 28		14 „	„ 8		½ „
Mar. 1		17 „	„ 9	·001	1½ „
„ 2	·001	17 „	„ 10		7 „
„ 3		14 „	„ 11		7 „
„ 4		14 „	„ 12		10 „
„ 5	·001	10½ „	„ 13		3 „

The temperature, which formerly kept about normal, rising occasionally to 99, has, since commencing the injections, been sub-normal in the morning and 99 at night. The patient has gained weight rapidly, and now weighs 9 st. 5 lbs. as against 8 st. 10¼ lbs. on admission to the Jaffray Hospital three weeks ago; 3 lbs. of this 8¾ lbs. were gained in the week before the commencement of the injections, and 5¾ lbs. in the fortnight since. The chest condition has improved somewhat, the lungs being much drier. There is slight affection of the larynx, but this has not yet altered much The patient's general condition has much improved.

PERISCOPE.

DISEASES OF THE SKIN.

BY R. M. SIMON, B.A., M.D. CANTAB, M.R.C.P.

Psorospermosis.—Papers by Dr. S. Lustgarten and Dr. Piffard in the *Journal of Cutaneous and Genito-urinary Diseases*, Jan., 1891.

Psorospermosis is defined by Piffard as a condition of the skin of varied lesion, but characterised by the presence of psorosperms. Darier, Wickham, and others declare the psorosperms to be a living animal parasite, which infests the human skin as well as the bodies of some of the lower animals. It consists of a roundish or oval cell containing one or more nuclei, the nucleus occupying but a small portion of the cell, the plasmic portion of which is extremely transparent and structureless. They are found in Darier's disease, psorospermose follicularis végétante; in Paget's disease of the nipple, molluscum contagiosum; and lichen planus. Piffard traverses the theory of the parasitic nature of the disease, and, after submitting sections of molluscum contagiosum to polarised light, he concludes that the psorosperms are not animal parasites, but are simply rete cells undergoing a species of corneous degeneration. Similarly in Paget's disease, he recalls the fact that the prominent feature of ordinary epithelioma is a proliferation downwards of the rete cells, with here and there the formation of pearls, consisting of stratified horny cells, which are perhaps caused to assume this form in consequence of pressure, and therefore he believes that the disease is an epithelioma from the first, in which the proliferation occurs laterally instead of vertically, but with the same tendency to degeneration and cornification of the epithelial cells. He has had only limited opportunities of studying Darier's disease, but believes that it also will fall into the group of epithelial degenerations rather than into that of animal parasites.

Dr. Lustgarten gives a description of a case occurring in a man æt. 49, of medium size and average strength, who served in the war of the rebellion. In 1864, in the fourth year of his service, after the prodromal signs of pricking and sticking in the hands for several months, there appeared the first symptoms of the disease, which, in the course of a year, spread over the extent of surface at present affected. From that time the course of the disease has been very chronic, shewing in some places a slow involution, in others the development of new efflorescences, with severe exacerbations during the very cold and very warm seasons of the year, at which time there has been a constant itching and burning, and the patient's sleep has been so disturbed that he has become neurasthenic. The face and scalp are affected, and the anterior and posterior surfaces of the trunk, most markedly in the prosternal and inguinal regions; the extremities, especially the extensor surface of the left arm, the elbows, and knees, are affected in a less marked manner. The thighs and legs shew only scattered efflorescences. The nails, without exception, are degenerated, thickened, and split; in the groove of the nail and underneath its free edge lie masses of a brittle dirty-grey substance. The affected skin is everywhere darkly pigmented about the efflorescences, but most markedly so on the face. Efflorescences without signs of inflammation are found, especially on the non-hairy portion of the face. The face has a peculiar appearance because of its greasy shine, its pigmentation, and the large size of its pores. All the follicles are dilated to a size ranging from that of a millet seed to that of a hemp seed, and are filled with a yellowish-brown fatty brittle substance, in some places translucent, which usually rises but slightly above the level of the skin. The somewhat bald scalp presents a similar appearance, except that the region about each follicle shews an inflammatory reddening and the contents of the follicle project, like the head of a nail, several millimètres above the level of the skin, or spread as a thin, dry, greasy crust over the surrounding surface. Between the efflorescences many small, irregular, white atrophies of the skin are found, which are no doubt the result of previous efflorescences. These may also be seen on those parts of the body which have been long affected. The lesions on the body have a marked papillary character, consisting of small reddish-brown nodules, varying from the size of a millet-seed to that of a hemp-seed, and having a small comedolike plug, in some cases pierced by a hair. These are mostly discrete, but in some parts are near together, becoming confluent and forming small groups, or constituting, as on the left forearm, a large oval plaque healed in the centre. In the epigastric and inguinal regions are eczematous patches emitting a repulsive odour. The nipples and areolæ on both sides are enlarged and prominent, but not infiltrated. The nipples themselves are shaggy, and the little elevations are covered with a thin fatty layer which is easily scratched off, after which bleeding readily occurs.

In the coating of the papillary formations, besides epithelial cells containing fat, psorosperms are found, although in less number than elsewhere. The palms and soles are normal, and have never been affected. If the plug of one of the follicles be squeezed out, the protruding mass is not white, fatty, and sausage-like, as in the case of comedones, but yellow, brittle, and spherical. Under the microscope a fresh plug shews two different elements. The first is the epidermial cell, having, for the most part, a well-preserved nucleus, and containing a strongly refracting substance like small drops of fluid, which stained preparations shew to be kerato-hyalin or eleidin. The second element is a structure new and foreign to the human body. It is a cell which refracts light more strongly than the human cell, and is slightly yellow, round or oval sharply defined, and at times presents a capsule-like double contour. These cells, almost without exception, shew a distinct nucleus, which consists in a round granular mass, at times eccentrically situated. The protoplasm of these cells contains some granules, and adherent to the capsule are seen the above-mentioned hyalin drops. A portion of the cells lie in small groups, apparently free, while a considerable number lie within the epithelial cells. In this case the nucleus of the epithelial cell is displaced, and the central portion of the cell is occupied by one psorosperm, or rarely by two.

Pilocarpine in Dermatology.—Dr. Klotz read a paper on this subject at the last annual meeting of the American Dermatological Association, and concluded with the following suggestion:—"In the light of more recent theories of the physiology of the secretion of sweat, the use of pilocarpine in pachydermatous and xerodermatous conditions of the skin is strongly indicated and deserves to be subjected to renewed trials, but in small doses and long continued, as recommended already by Pick."

This proposition did not seem to commend itself to the meeting, very few members having had much experience of the treatment; but the work of Pick and others has proved the value of pilocarpine in prurigo, chronic urticaria, and some eczematous conditions, all of which are, as a rule, most difficult to treat, and but little amenable to the ordinary methods at our disposal. That the results of treatment are not due to diaphoresis alone, and the saturation of the affected parts in sweat, was proved by Pick, who took careful precautions to prevent the recurrence of profuse sweating, and concluded therefore that the improvement of the patient depended upon the direct influence of the pilocarpine on the skin itself. His theory of the utility of the drug is based on Unna's recently published views as to the secretion of sweat.

The sweat or coil glands, as he calls them, are for keeping the skin sufficiently oiled, but the watery sweat is drawn from the inter-cellular juice, which circulates beneath the impermeable corneous layer of the epidermis in the inter-epithelial spaces of the rete malpighii, and has free communication with the sweat duct, which here is without any membrane. Increase of this watery sweat and dilatation of the blood vessels of the papillary plexus, with advantageous results to the products of chronic eczematous inflammation, are to be expected and are found from the use of pilocarpine.

Treatment of Alopecia —Lassar and Groetzer (*British Journal of Dermatology*, Feb., 1891).

1. Thoroughly wash the head with tar soap for ten minutes.
2. Wash with hot water and finish with cold; wipe and dry.
3. Rub in a solution of perchloride of mercury, 1 to 900 (equal parts of glycerine, water, and eau de Cologne).
4. Rub in a solution of naphthol as follows:—Naphthol, 1 part; absolute alcohol, 200 parts.
5. Anoint the scalp with a pomade containing acidi salicylici, 2 parts; tinct. of benzoin, 10 parts; neatsfoot oil, 100 parts.

The treatment should be carried out daily, and continued for six weeks or more.

Nature and treatment of Impetigo.—Dr. W. Dubreuith re-states in the *Annales de Dermatologie* the views of the French school upon these points. Impetigo is regarded as a disease *sui generis*, definitely characterised by its vesico-pustular aspect, by its evolution, by its auto-inoculability, and its non-inoculability in a healthy individual. Impetigo contagiosa is not considered a special condition; there is only one impetigo, and this is contagious. Ecthyma is in his opinion only an irritated impetigo, inflamed by the sanguineous stasis, by the friction of the clothing, by traumatisms of every sort, and favoured by dirt, and often by a cachectic state.

The treatment recommended is the detachment of the crusts, and the prevention of their re-formation. The first is effected by poultices or ointments, the second by applying them frequently and in great abundance, so that the surface of the skin is not allowed to become dry.

The ointment should be applied daily in a thick layer, and covered with linen smeared with the same ointment.

For ointment the following is recommended :—

Vaseline	
Lard āā	℥iss.
Oxide of Zinc	ʒv.
Salicylic Acid	ʒss.
Acetate of Lead	15 gr. M.

URINARY AND RENAL DISEASES.

BY ROBERT SAUNDBY, M.D., F.R.C.P.,

On the Treatment of Bright's Disease.—T. Grainger Stewart, M.D. (*Brit. Med. Journal*, Aug. 16th, 1890.)

He recommends *residence* in Southern Europe, in Algiers, in Egypt; a voyage to the Cape or a sojourn there, or a similar trip to Australia or New Zealand or to some of the West Indian Islands, avoiding cold and especially variable climates, and high altitudes. *Woollen underclothing* should be regularly used, and light warm wraps carried about to be thrown on if occasion arises. The *diet* should be of good nutritive quality, easily digested, and not irritating to the kidneys. These conditions are met with in a diet largely composed of milk, with some pudding, fruit, and a little white meat. *Alcohol* should be taken very sparingly, Rhine wines or sparkling wines or a light pure German beer when specially indicated, but not for habitual use. For acute nephritis, rest in bed, with milk diet, purgatives, and diuretics may influence the inflammatory process. No drugs can be relied upon to check the drain of albumen, but the tincture of perchloride of iron and fuchsin sometimes do so. Iron combats the anæmia. Dropsy may be treated by diaphoretics and diuretics. The bowels should be kept acting, but hydragogue cathartics are to be avoided. Rubbing and bandaging the limbs do good. Accumulations of fluid in the serous cavities should be relieved by tapping, but the cellular tissue should not be tapped unless this becomes absolutely necessary. Uræmic symptoms are to be combated by hydragogue cathartics, not packs, hot air baths, diuretics, and in some cases blood-letting. Bromides, chloral, or a little chloroform often helps materially. Gastro-intestinal symptoms can be relieved by bismuth, soda, rhubarb, and aromatics, or a few doses of calomel or blue pill. Pleurisy and pericarditis call for counter-irritation, paracentesis, and, especially in the latter, heart tonics or heart sedatives. Increased vascular tension may be benefited by nitro-glycerine, and the failing heart of the latter stages braced up by digitalis, strophanthus, or caffeine.

The relation of Bright's Disease to Insanity.—At the Medical Hospital Society M. Raymond recently read notes of a case of insanity which he considered to have a relation to Bright's disease. The patient was 65 years old. Mental disturbance appeared when she was 60 years old. She was never certain of having accomplished simple duties in daily life, and would return to her house to see if the door was thoroughly shut and the fire was out. After making purchases she would return several times to see if she had paid. She suffered from pain in the kidneys, œdema of the legs, and her urine contained 1·20 gramme per litre of albumen. Milk diet and iodide of potassium reduced the albumen to 0·50 gramme, and the mental condition improved. If the treatment was discontinued the mental disturbance reappeared. M. Raymond attributes the condition to uræmia, to the auto-intoxication which accompanies albuminuria. A woman, 27 years of age, was taken to Lariboisière Hospital in a state of coma. On emptying her bladder it was ascertained that her urine contained a large quantity of albumen. Soon after she had an attack of acute mania and died. The necropsy revealed interstitial nephritis. In 1882 M. Raymond published in the *Archives de Médecine* cases of mental disturbance consecutive to Bright's disease. Subsequently M. Barié published a similar case, and the patient was considered insane and confined in an asylum. In 1885 M. Dieulafoy specially studied the subject, and read a paper before the Society on insanity connected with Bright's disease.

The distribution of Bright's Disease.—Dr. Purdy of Chicago has recently published in the columns of the *New York Medical Journal* the results of his researches into the distribution of Bright's disease in the United States, with the special object of shewing the influence of climate upon the malady in question. He takes the year 1880 for a standard of comparison, and finds that in this year the deaths from morbus Brightii were 75,386—a proportionate mortality of 7·11 per 1000 deaths. The heaviest mortality is found in the States of New Jersey, New York, Connecticut, Massachusetts, and New Hampshire, while the lowest mortality is found in the States of Tennessee, Georgia, Nebraska, North Carolina, and Arkansas. Speaking generally, the eastern coast line of the Union would seem the most affected (its middle region most of all), then the northern portion, and, lastly, the southern. The first of these districts shews a mortality of 19·73 per 1000 deaths, and the northern coast region 17·38 per 1000 deaths, or, in other words, the rate is here from twice to three times the general average. In the south-western States the mortality from Bright's disease falls from 1·5 to 2 per 1000 deaths, or about a fourth of the general average.

From these statistics Dr. Purdy draws certain conclusions regarding the influence of meteorological conditions upon the causation of Bright's disease. He relies upon his facts to prove that the conditions which favour the genesis of the malady are cold, damp, and variability of temperature, and that, on the contrary, heat, dryness, and equability tend to diminish the liability to Bright's disease. He believes that cold is effective chiefly when associated with a high degree of humidity, and that a low temperature is readily tolerated when the air is dry. Similarly he maintains that humidity is inoperative if accompanied by heat and equability.—*The Lancet.*

REPORTS OF SOCIETIES.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

PATHOLOGICAL AND CLINICAL SECTION.

Meeting held February 27th, 1891; Mr. PRIESTLEY SMITH, M.R.C.S., in the Chair.

Double Exophthalmos.—Mr. Eales shewed a case of double exophthalmos in a man aged 20, an engine cleaner, which had come on first in the left eye, and a few days later in the right eye some months ago, the onset being accompanied by headache but no vomiting. When first seen, a week or so after the commencement, there was considerable proptosis of both eyes, with chemosis, and great injection of the conjunctiva, but no pulsation or bruit was then or at any time since noticed, nor had optic neuritis ever been observed though the retinal veins throughout were remarkably distended and tortuous. There was no history of head injury. A sister is stated to suffer from caries of the ankle. The patient was throughout anæmic. Under treatment by potassæ iodidi and Blaud's pills the condition had much subsided during the last six weeks. Mr. Eales thought thrombosis of the left cavernous sinus, spreading to the sinus of the right side, the probable cause of the proptosis, and thought this might either be due to anæmia or possibly to local bone disease.

Periosteal Sarcoma of the Shaft of the Femur; amputation at hip joint; recovery; subsequent death from bronchitis.(?)—Mr. F. Marsh shewed this specimen, and related the following details of the case.

The patient, a healthy-looking man, æt. 36, having a good family and previous history, was admitted into the Queen's Hospital June 4th, 1890. About Christmas, 1889, he suffered from an aching pain in the lower part of the left thigh, and shortly afterwards he noticed that the thigh was slightly swollen and felt harder than the other. He could not remember any distinct injury, though he might have had it knocked. It continued much the same until March. He then consulted a medical man, who attributed the pain to rheumatism. Early in April the pain got worse, and the swelling and hardness became more marked. From this time, in spite of complete rest, the swelling steadily increased in size, the pain was more constant and often of a bursting character, and the patient began to lose flesh. His medical adviser, Dr. Conway, of Brierley Hill, considered the swelling to be a sarcoma, and recommended him to obtain admission into hospital.

On admission, a hard oval swelling was found reaching from about two inches above the condyles of the left femur to above the middle third of that bone. It seemed to surround the femur, and was most prominent on the outer side; the soft tissues above were œdematous for some inches. A periosteal sarcoma of the shaft of the femur was diagnosed, and amputation at the hip joint advised and accepted. The operation was performed on June 12th by a modification of Furneaux Jordan's method. An incision was made down to the bone on the outer side of the limb, anterior and posterior skin flaps were formed, the muscles circularly divided, pressure forceps applied to chief bleeding vessels, and the limb disarticulated. The hæmorrhage was controlled by the method described by Mr. Jordan Lloyd in the *Lancet* for 1883 (vol. i., p. 897). In this case it was not altogether satisfactory, several of the larger arteries spurting when divided, and the limb being full of venous blood, although previously emptied by elevation.

The patient rallied fairly well from the shock, and the wound healed by first intention with the exception of the drainage tube tracks. Dry boracic dressings were used throughout. In a month he was up and out of doors, but he was kept in the hospital until September 10th for the sinuses to finally close. He then went home quite well and strong, with an excellent stump, and having gained considerably in weight. It has been incidentally heard that he kept well until the commencement of winter, when he got bronchitis, which rapidly terminated fatally.

The growth proved to be a large periosteal sarcoma of the shaft of the femur, of firm consistence—a rare combination. It is in these cases especially that the diagnosis from "quiet necrosis" is often extremely difficult, and almost impossible in the earlier stages. The history is seldom of much assistance, but a steady increase in size, and little or no diminution of pain with the limb completely at rest, are indicative of sarcoma. The comparatively short time the patient lived subsequent to his recovery from the operation is a matter of regret. The mode of death, too, is suspicious, recurrence in the lungs being a frequent termination of periosteal sarcomas of the femur.

Kidneys.—Mr. Barling shewed kidneys from a case of pyonephrosis and latent renal calculi.

MIDLAND MEDICAL SOCIETY.

Wednesday, Feb. 18th, 1891, W. Ross JORDAN, M.R.C.S., in the chair.

Aphemia.—Dr. T. Stacey Wilson shewed a man, aged 51, who was suffering from a third attack of aphemia. The first attack, which occurred in 1885, was accompanied by a slight degree of word blindness; and he remained absolutely dumb for eleven months. He then suddenly and completely recovered his speech, and remained perfectly well till January 1890, when he again lost his speech. On this occasion there was, just as during the first attack, much headache and some fever. He regained his speech in thirteen weeks, however, thanks to a sudden fright that he had. He lost his speech for the third time last August in just the same way as on previous occasions, and his present condition is one of absolute mutism, although in the possession of all his other faculties. Dr. Stacey Wilson pointed out that the case at the present time might be considered to be practically one of hysterical mutism, and that some sufficiently powerful and correctly directed external stimulus was all that was necessary to put the patient's motor speech centre once more under his control.

Rodent Ulcer of Eyelids.—Mr. Wood White shewed a man, aged 53, who, five years before, had been struck on the upper eyelid by a piece of wood. The wound never healed, but, according to the patient's statement, "seemed to ulcerate and go on wasting." It continued thus for two years before it spread to neighbouring parts. All previous wounds healed readily. Nine months ago the man was first seen by Mr. Wood White. The eyelids were then much thickened and infiltrated, especially near their margins. The palpebral aperture was reduced in size, and the eyeball pushed backward; but there was no sign of ulceration. Various opinions were expressed as to the diagnosis, some regarding the condition as one of epithelioma. The patient was again seen a week ago, when the appearances were much altered. The infiltration had spread upwards as far as the eyebrow, and downwards for some distance over the cheek. Its margin is well defined, and it leaves the skin in an atrophied and scarred state, but there is still a *remarkable absence of ulceration.*

Foreign Body in the Eyeball.—Mr. Wood White shewed a patient who had received a penetrating wound of the eyeball from a piece of bell metal. The vitreous was perfectly clear, and the details of the fundus could be well seen. The foreign body was adherent to the retina on the inner side a short distance behind the ciliary processes, and was projecting into the vitreous; the reflex from it was bright and glistening. It had been in the eye for several days, but there was no sign of redness or inflammation. Bell metal being a composition of iron, brass, and glass, and the piece being firmly fixed in the globe, the electro-magnet had not been used.

Deformity of Pelvis.—Dr. Purslow shewed a patient with rickety deformity of pelvis, for whom he had performed craniotomy in the out-door maternity of the Queen's Hospital. She had been in labour twenty-four hours. Version had been performed by the Obstetric House Surgeon who had been called to the case two hours previously, and when seen by Dr. Purslow the feet of the child were protruding and the cord pulseless, but the head not engaged in brim; the occiput was lying to the left side. The head was perforated behind the right ear and delivered by the aid of the crotchet, though not without difficulty, after evacuating the brain. Patient made a rapid recovery without a single bad symptom. She was 28 years old; had been pregnant three times previously; delivery taking place in each pregnancy at the seventh month; all the children being dead, and on two occasions the forceps having to be used. Patient presented a characteristic rickety appearance. Height 4 ft. 4 in. There was a marked projection forward of the sacral promontory, and the symphysis pubis was depressed backwards in the median line at its upper part. The diagonal conjugate measured by the hand while the patient was under chloroform $= 3\frac{1}{6}$ in. True conjugate, allowing for shape of pubes, not more than 2½ inches.

Specimens.—Dr. Purslow shewed the fœtus from the above case. It was a male fully developed and with large well-ossified head. He drew attention to the difficulty in piercing the after-coming head with the perforator owing to the thickness of the skull at the point which had to be selected.

Hernia into and Cysts of Umbilical Cord.—Dr. Purslow shewed a fœtus with the above, and also having a hare-lip; it was born at between the seventh and eighth month; the labour was complicated by hydramnios; and the child lived a few hours. The hernia contained a coil of intestine covered only by peritoneum and amnion through which it could be clearly seen. Dr. Purslow drew attention to the possibility of the ligature being applied on the distal side of the hernia, and so causing death from obstruction, or separation of intestine and intestinal fistula.

Paper.—Dr. Foxwell read a paper on The Heart Murmurs in Anæmia.

Wednesday, March 4th, 1891.

M. A. Messiter, President, in the Chair.

Abdominal Aneurism.—Dr. Suckling read notes on a case of abdominal aneurism.

Nephro-lithotomy.—Mr. Barling shewed a young man who had been successfully operated upon.

Suprapubic Lithotomy.—Dr. Cameron Kidd read notes on a case of suprapubic lithotomy in a girl aged 8.—N., aged 8 years, but very small for her age, looking about six, had suffered for three years from incontinence of urine; latterly micturition about every ten minutes, much pain, never any blood. Large calculus struck.

On Jan. 12th, 1891, an attempt to extract through the dilated urethra completely failed.

On Jan. 24th suprapubic lithotomy was performed. The operation was easy. Five ounces of boracic solution in bladder. Stone weighed half an ounce all but eight grains. Bladder sutured with catgut. Catheter inserted.

25th, catheter removed, but that evening urine was forced through the wound in a fit of coughing. Catheter reinserted.

31st, fistula ceased running. Feb. 3rd, the wound healed.

The high operation was preferred to lithotrity for the following reasons:—Lithotrity had always appeared to him to be a tedious and often a dangerous proceeding in the hands of any but a skilled specialist, whereas the suprapubic operation, especially in children, is most simple, and sure in its results. It was feared that owing to the recent dilatation of the urethra a difficulty might be experienced in keeping the bladder distended during the manipulation of the lithotrite.

Cysts.—Mr. Christopher Martin shewed two cysts removed by Mr. Lawson Tait from a woman aged 44 years. The cysts were equal in size, each being as large as a five-months' pregnancy. The left one was an ordinary ovarian cyst. The Fallopian tube on that side became lost on its walls, no fimbria being visible. The tumour on the right side was an embedded cyst of the broad ligament, from the cavity of which it had to be enucleated. During the process of enucleation there was exposed a thin walled dilated tube, between four and five inches long and about as thick as the little finger, running across the base of the broad ligament from behind forwards and inwards. It terminated in a blend extremity just beneath the inner end of the right Fallopian tube. It was believed to be the dilated unobliterated Wolffian duct.

The patient made an uninterrupted recovery.

Ruptured Tubal Pregnancy.—Mr. Christopher Martin also shewed a specimen of ruptured tubal pregnancy. The patient was married and 33 years of age. She had one child eleven years ago, but no miscarriages. Her menses were regular, but profuse and painful. She became unwell on December 20th, 1890, and, whilst menstruating, was suddenly seized with severe colicky or cramp-like pains in the hypogastrium. She became very ill and faint, and was put to bed. At irregular intervals she had intermittent gushes of blood and repeated attacks of the cramp-like paroxysms.

When Mr. Martin saw her, on January 24th, she was profoundly anæmic, the pulse was rapid and weak, the abdomen was tympanitic and tender. On examination, the uterus was found to be enlarged, and there was a large, soft, irregular, ill-defined, tender mass behind and to the right of the uterus. The patient was removed without delay to Mr. Lawson Tait's hospital and the abdomen opened. The peritoneal cavity contained a quantity of old and recent blood clots. The right Fallopian tube was found to be ruptured and was removed. It contained a quantity of placental tissue and distinct fœtal membranes, but the fœtus could not be found. The abdomen was washed out, a drainage tube inserted, and the wound closed.

The patient made a good recovery, and returned home very anæmic but otherwise well. The pregnancy was probably about two months advanced.

Paper.—Mr. Marsh read a paper on "Adenoid Vegetations of the Naso-pharynx."

REVIEWS.

LECTURES ON DIABETES.*

Barely two years have elapsed since the publication of Dr. Saundby's "Lectures on Bright's Disease," and we now have these "Lectures on Diabetes," which may be said to be even a more valuable contribution to scientific medicine than those were.

It is well-nigh impossible for a busy practitioner to keep abreast of the rapid advance of medical knowledge without the help of such text-books as the present, which in a moderate compass contains an account of every paper worth notice, British and foreign, on the subject of diabetes. But something more than a mere enumeration of results is required of the author, as he is expected to weigh the evidence *pro* and *con.*, to estimate its value; and the estimate should be based on the results of his own experience. These requirements are met in this volume. The author, in his capacity of Pathologist and subsequently in that of Physician to the General Hospital, has had ample material, both living and dead, to enable him to speak with authority. Good use has been made of this material, as notes of a great number of cases accurately taken are interspersed throughout the text, followed by suggestive commentaries and references to their points of interest.

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* Lectures on Diabetes: including the Bradshawe Lecture, delivered before the Royal College of Physicians on August 18th, 1890. By Robert Saundby, M.D. Edin., F.R.C.P. Lond., etc. Bristol: John Wright and Co. 1891.

The book consists of seven chapters. In the first an historical account of diabetes, a discussion on the physiology of glycosuria, on its experimental production, and the theories of glycosuria are given. The chemical part of this is well up to date.

The second chapter, on the etiology of diabetes, is very valuable, because of the large amount of information on the geographical distribution of this disease. Dr. Saundby has spared no pains to obtain accurate information on this point, as he has corresponded with physicians, and others capable of furnishing information, in all parts of the world. It is interesting to note here that no deaths from diabetes, registered within the last ten years, have occurred in Fiji, Trinidad, St. Lucia, St. Vincent, Nevis, Antigua, Dominica, Virgin Islands, Falkland Islands, Lagos, Labuan, and Cyprus, among the British possessions. The remarks of Surgeon-General Cornish on the frequency of the disease in India, and its probable connection with over-education, are of great interest. The influence of race, age, heredity, the use of certain kinds of foods and drinks, obesity, are discussed; a list of drugs causing glycosuria is enumerated ; and the question of contagion, the effect of injuries and of various diseases, and of other factors are fully discussed.

The third chapter is a reprint of the author's "Bradshawe Lecture," delivered before the Royal College of Physicians, and already published in the medical journals. It deals with the morbid anatomy of diabetes, and is illustrated with original drawings accurately representing changes found in the heart-muscle, liver, pancreas, and kidneys.

Chapter IV. treats of the clinical history of the disease, with a clear account of the method of estimating sugar in urine. Dr. Saundby here describes Gerrard's glycosometer, which seems to be a very useful and simple instrument. The polarimeter is justly condemned. Tests for acetone and diacetic acid are given; and a description of the complications of diabetes completes this chapter.

The account of diabetic coma given in the fifth chapter is extremely interesting; and one cannot help concluding, after reading it, that the poison or poisons causing this condition must be produced in the digestive canal. Dr. Saundby shews that such coma may occur and yet no ferric chloride reaction be detected in the urine. Still the acid giving that reaction is not necessarily absent from the *blood*. The latter part of this statement is however not Dr. Saundby's but our own. The fat embolism theory is rejected, as the author has failed to find fatty blood in many cases; and this is also our experience. He also is disposed to think that "Küsmaul's coma is not restricted in its occurrence to diabetes, but may be met with in several other diseases, especially in those in which the state of the blood has undergone profound pathological alteration."

The treatment is disposed of in the sixth chapter, and very useful directions as to dietary, etc., are given.

An account of diabètes insipidus occupies the remainder of the volume.

The publication of this book has filled a gap in medical scientific literature, and a perusal of its contents will enable anyone to learn all that has been published of importance upon diabetes up to date; while those anxious to consult the original sources can easily do so, thanks to the complete bibliographical references at the end of each chapter.

The lectures are written in an agreeable and interesting style, and the book itself is well got up.

SPINAL CONCUSSION.*

The title is an imperfect definition of this book of over 300 pages, which contains details of a number of cases in which injury to the back was absent, or dwarfed in importance by damage to more important structures, and which contains also a chapter on traumatic insanity.

After a historical introduction on spinal concussion, we have an epitome of Erichsen's and of Herbert Page's views on this much debated subject, the author evidently being thoroughly imbued with Erichsen's ideas.

A chapter is then devoted to recent discussions on spinal concussion, and another to Oppenheim's views on traumatic neurosis, nearly ninety pages thus occupied being, in the main, quotations from various authors with an occasional commentary by Clevenger, in which Page comes in for a considerable amount of hostile criticism.

Under the heading "Illustrative Cases of Spinal Disease,' twenty cases under the author's observation and about fifty from other writers are given at some length. In many of these there is no evidence of injury to the spine at all; in others, injury to the head is evidently of much greater importance than the associated blow on the back. Having read these cases, one leaves them with the feeling that a writer who quotes these as instances of "spinal disease" is hardly suited to the unravelling of the curious and obscure conditions which follow injuries received in railway accidents.

The brief chapter on traumatic insanity is good, though hardly in its place in a work entitled "Spinal Concussion."

A short description is given of the anatomy of the spinal cord, and the communications between the cerebral and spinal nerves are detailed at length, especial stress being laid upon the latter as of the greatest importance in producing vaso-motor disturbances, which the author evidently regards as being the most potent factors in the production of the symptoms which so commonly arise after injuries to the back.

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* **Spinal Concussion. By S. V. Clevenger, M.D. Philadelphia and London: F. A. Davis.**

The remaining chapters are devoted to the symptoms of Erichsen's disease (regarded as synonymous with spinal concussion), Diagnosis, the Pathology of various conditions which follow spinal injuries, Treatment, and Medico-legal considerations.

It is unfortunate that Dr. Clevenger should have adopted the term "Spinal Concussion." Spinal concussion is inexact for two very obvious reasons; first, in a majority of cases there is no immediate disturbance of the functions of the spinal cord such as is present in concussion of the brain; and secondly, because such symptoms as do arise should be much more properly ascribed to derangement of the centres contained within the cranium. The description of these conditions by Oppenheim and Page as "fright neuroses" appears to us to be much more satisfactory. We must credit the author with the attention he has bestowed upon the disturbance of the sympathetic system in immediate connection with the cord. This is a subject which has perhaps not hitherto received the notice it deserves. Dr. Clevenger's views are original and interesting, and appear to bring us nearer to the actual cause of many symptoms in the neurasthenic condition which prevails after injuries received in railway accidents.

It should be mentioned that the work is illustrated by numerous wood-cuts and a few chromo-lithographs.

RAILWAY INJURIES.*

THE present publication covers to a great extent the subjects treated of by the author in a former book, but in this volume we happily miss the controversial tone adopted in "Injuries of the Spine and Spinal Cord." The book now before us is of great value as the record of the mature experience of a surgeon who has had unusual opportunities of observing the conditions of which he writes, and the fair-minded way in which he discusses many necessarily difficult points carries conviction to the mind of the reader, and induces respect for the author.

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* Railway Injuries in their Medico-legal and Clinical Aspects. By Herbert W. Page, M.C., F.R.C.S. London: Charles Griffin and Co.

The first chapter deals with the injuries of the back that may arise in railway accidents, and is mainly a restatement of the opinion formerly expressed by Mr. Page, that in a large majority of cases there is damage to the parts outside the spinal column, but rarely to those inside; but there is no tendency to pooh-pooh the real importance of the former class of injuries. We must, however, take exception to the view he presents of a case described on page 19, in which some doubt is thrown upon the production of myelitis by a railway accident in which epididymitis arose, and in which it is suggested that a urethritis was the cause both of the myelitis and the epididymitis, for it seems more likely that the latter complication was due to a spreading cystitis which appears to have existed. Amongst the many important points dealt with in this chapter is the possible association of injury and syphilitic pachy-meningitis.

The chapter on general nervous shock is very good, stress being laid upon the efficacy of fright as a sufficient cause of "shock" in the absence of anything like severe injury. Neurasthenia is the term accepted to describe that curious train of symptoms with which everyone is familiar in these cases of injury, where everything is subjective and nothing objective.

Following this is a chapter on allied neurasthenia and hysteria, an association which up to the present time has not received sufficient recognition.

Chapters IV. and V. are devoted to the fright neuroses or traumatic hysteria and stress. Considerable weight in connection with these is given to previous neurotic manifestations. A parallel is drawn between patients suffering from fright neurosis and post-hypnotic suggestion, which undoubtedly gives a reasonable explanation of the curious hysterical conditions which arise after railway injuries. A few pages describe the rational treatment of patients damaged in collisions, and these are followed by chapters on malingering and on the medico-legal aspect of railway injuries. In more than one place a contrast is drawn between the speedy recovery of hospital patients suffering from injury due to ordinary causes and the delayed recovery of people injured in railway accidents, and it seems to us that it is hardly fair to compare the two classes. In the latter there is the element of fright, to which Mr. Page himself rightly attributes great importance; and it must be remembered, too, that these patients, being drawn from a higher social class than the ordinary hospital patient, are much more liable to the class of disturbances which we agree to recognise as neurotic.

It should be mentioned that a number of cases are inserted in the text which are of much value in illustrating the conditions described.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—PARKIN BEQUEST.—In terms of the bequest made to the Royal College of Physicians of Edinburgh by the late Dr. John Parkin, Fellow of the College, a prize is hereby offered for the best essay on the "Curative Effects of Carbonic Acid Gas or other forms of carbon in Cholera, the different forms of Fever, and other diseases." The prize is of the value of £100 sterling, and is open to competitors of all nations. Essays intended for competition, which must be written in the English language, to be received by the Secretary not later than 31st December, 1892. Each essay must bear a motto, and be accompanied by a sealed envelope bearing the same motto outside and the author's name inside. The successful candidate must publish his essay at his own expense, and present a printed copy of it to the College within the space of three months after the adjudication of the prize.—In name and by authority of the Council of the College, G. A. GIBSON, M.D., Secretary. March 9th, 1891.

NEW INVENTIONS, DRUGS, ETC.

Quinine Tabloids.—Messrs. Burroughs, Wellcome and Co. have submitted for inspection and trial a specimen of their Tabloids of Quinine Bisulphate. They are much more readily soluble than ordinary pills of quinine. The crystals are reduced to a fine powder and compressed in such a way as to disintegrate in the stomach within a minute from the time they are swallowed. They possess all the advantages of a solution in point of rapidity of action, while at the same time the Tabloid is more portable, and on account of the flattened shape is more easily swallowed than an ordinary round pill. It is noteworthy that the Bisulphate of Quinine is soluble in 10 parts of water, while the Sulphate usually requires 740 parts.

Robinson's Patent Barley.—We have received a sample of this old and well-known food for infants, which was strongly recommended by our distinguished fellow citizen, the late Pye H. Chavasse. It is barley "prepared by a special mode of drying the grain under a regular temperature without wasting or parching it, so as to destroy its vegetating properties, and at the same time retain its nutritive qualities unimpaired," that is to say, it is partly converted into dextrine and dextrose, and hence partly digested. Combined with milk this makes quite the best artificial food for infants, while it is also very useful whenever digestion is enfeebled, as in illness, old age, et cetera.

Thompson's Atmospheric Gas Jet. — This useful little invention, combining the advantages of a Bunsen flame with an ordinary gas burner, seems to us just what is wanted by every man who now uses a spirit lamp to boil urine, etc. We strongly recommend each of our readers to spend eighteen-pence on getting one.

Miscellany.

THE TRAINED NURSE.

A sweetly winsome face,
Ripe lips and merry eyes,
Where tender pity lies ;
Brown hair beneath a cap of lace
To keep the wayward locks in place.

A fichu neat and plain
Crossed on her bosom white ;
Her heart beneath is light,
But throbs in sympathy with pain,
And others' sorrows feels again.

Her very presence heals,
Her quiet footfalls soothe,
Her hand is soft and smooth,
And as my fevered pulse she feels
A glad thrill through my being steals.

And when, grown bold, I say
"I love you, gentle nurse !"
She says, "I'm sure you're worse !
You must not talk ; you're worse to day."
And so she flings my heart away.

The Medical Age.

New Books, etc., Received.

Transactions of the Royal Academy of Medicine in Ireland, vol. viii. Edited by WILLIAM THOMSON, M.A., F.R.C.S. Dublin: Fannin and Co. 1890.

Lectures on Diabetes: including the Bradshawe Lecture. By ROBERT SAUNDBY, M.D. Edin., F.R.C.P. Lond. Bristol: John Wright and Co. 1891.

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THE

BIRMINGHAM MEDICAL REVIEW.

MAY, 1891.

ORIGINAL COMMUNICATIONS.

ON THE TREATMENT OF SURGICAL CASES OF TUBERCULOSIS BY KOCH'S REMEDY, WITH ABSTRACTS OF FORTY-FOUR CASES.*

BY GILBERT BARLING, B.S., F.R.C.S.,
ASSISTANT SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.
PROFESSOR OF PATHOLOGY IN QUEEN'S COLLEGE.

GENTLEMEN—

It is now five months since Koch announced that he had discovered a remedy for Tuberculosis. More recently he has given an outline of the way in which this material is prepared, and we know that it is a solution in glycerine of the products derived from pure cultivation of the tubercle bacillus, and the remedy is now referred to concisely as Tuberculine. The time that has elapsed since the publication of Koch's first paper has been occupied by many of us in observing cases treated in England and elsewhere by his remedy, and it is evident that there is considerable diversity of opinion as to the value of Tuberculine as a therapeutic material. For this reason I think the Society has done well to arrange for this discussion.

In the brief time at my disposal to-night I shall confine myself mainly to the consideration of the broad questions whether Koch's statements are borne out by experience, and whether we have a real remedial agent in our hands, or something which, whilst of surpassing interest to the physiologist and the pathological experimentalist, is of no value to us as practitioners of medicine and surgery. Many questions must remain for future solution—the regulation of the dose, both as to amount and as to frequency of repetition; whether some classes of cases are more suitable for the treatment than others; under what circumstances Tuberculine should be used in conjunction with operative measures; and perhaps most important of all, whether the present improvement in our patients will be permanent or not.

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* Read at a meeting of the Midland Medical Society April 15th to open a discussion on Koch's treatment.

In his original paper Koch stated several propositions, amongst them the following:—

1. The healthy human being reacts either not at all, or scarcely at all, to 1 cg. of the fluid.

2. That tuberculous patients are affected by smaller doses than this, as shewn by general reaction or constitutional disturbance and local reaction.

3. That patients suffering from diseases other than tubercular are not more affected by the remedy than healthy people.

4. That the symptoms of reaction occur without exception in all tuberculous patients after a dose of 1 cg., and that therefore the remedy will form an indispensable *aid* to diagnosis.

5. That the remedy in lupus, gland, bone, and joint tuberculosis can be given in doses of 1 cg. for the first injection and in rapidly increasing doses.

6. That by the treatment in lupus, glandular, bone and joint tuberculosis, a speedy cure in recent and slight cases, a slow improvement in severe cases is to be obtained.

7. That phthisis in the beginning can be cured with certainty by this remedy.

I propose to say something briefly on all these points except the seventh, which will be more properly dealt with by Dr. Carter, who speaks after me. Having discussed these points, I shall describe to you the results of treatment in about forty cases, grouping these, as far as possible, into several classes.

Proposition 1. We come first to the quantity necessary to produce reaction in healthy persons, which is said to be 1 cg., and which we may conveniently term the physiological dose. My strong impression is that this physiological dose is not absolute, but varies considerably with the susceptibility of the individual. I have not been in the habit of injecting healthy people indiscriminately to prove this, but it is forced upon me by the varying effects produced by tuberculine in patients under treatment, in whom the amount of general reaction does not appear to be proportionate to the amount of mischief present, and by the fact that in case No. 6 a dose of 4 mg. produced a temperature of 104; in No. 2, 6 mg. produced a temperature of 100·8; and in No. 5 a dose of 3 mg. produced a temperature of 103, although there is not the faintest reason to suppose that either of these patients was tuberculous. It must however be observed that those who have been much in the *post mortem* room are familiar with the fact that quiet tubercular lesions are occasionally found there of which no clinical evidence existed during life, and some such may account for the general reaction which is apt to be attributed, in apparently healthy people, to the idiosyncrasies of the patients.

Proposition 2. That tuberculous patients are affected by smaller doses than the healthy, and that this is shewn by general and local reaction, appears to me to be very generally true. Of the forty-four cases in the tables, the majority were in the General Hospital, where I was able to see them at all hours. In every *certainly* tubercular case under my *immediate* supervision not one failed to give *general* and *local* reaction to Koch's physiological dose of 1 cg, and nearly all of them to a much smaller dose, several of them, indeed, to a dose of 1 mg., as can be seen by referring to the reports of cases.

It is necessary to say a few words about the Reaction. It is most important to separate this into the general or constitutional, and the local reaction. The general reaction consists in elevation of temperature, quickened pulse and respiration, headache, pains in the back and limbs, shivering perhaps, and vomiting, somnolence also is often present. These symptoms are not in any sense *specific* to tuberculine, if I may so put it, but may be produced by the absorption into a patient's body, whether he be tuberculous or not, of products derived from the growth of other organisms besides the tubercle bacillus. We see this illustrated in the Sapræmia which occasionally follows parturition or instrumentation in the urethra. When therefore a patient has these signs of constitutional disturbance, with a small dose of tuberculine, say 5 mg., I am not prepared to accept this general change as certain evidence that tubercular disease is present, unless it is associated with local reaction. I therefore, you will see, exalt this local change into a much higher position than the general one.

In what does the local reaction consist? Well, it varies considerably in the different lesions. Nearly everyone is conversant with what occurs in lupus, of whatever variety, increased redness, tension, dryness, pain, giving place to exudation and perhaps to actual necrosis.

In larnygeal tuberculosis we are able to watch similar changes with the associated hoarseness to which they give rise.

In gland tuberculosis we have swelling, sometimes redness of the skin, and tenderness, and occasionally rapid breaking down into suppuration.

In joints we have swelling, heat, increased pain, and sometimes increased suppuration.

If we have to deal with a tuberculous ulcer in connection with hip disease, or after excision of a tubercular rib, the sore first becomes reddened at its margins, the granulations dry on the surface, and there is generally tenderness around; this gives place in a few hours to increased secretion *pro tem.* and the granulation surface cleans up.

In a case, No. 28, of tuberculosis of the urinary passages there was increased irritability of the bladder, increased pain in the loin, and increased separation of pus.

The question of local reaction in phthisis will doubtless be raised by other speakers.

Proposition 3. That patients suffering from diseases other than tubercular, are not more affected than healthy people, appears to be generally true, but I have not been pursuing this question at all extensively; the rule, however, held good in cases No. 1, 2, 3, 5, 6, it being always kept in mind what I have said as to the necessity for local reaction as positive evidence that a suspected condition is tuberculous. That the rule is not absolute is shewn by the severity of the constitutional disturbance and the change in the local conditions in leprosy and actinomycosis, as recorded by competent observers.

Proposition 4. That the symptoms of reaction occur without exception in all tuberculous patients after a dose of 1 cg., has proved in patients whom I have been able personally to carefully supervise absolutely true, whenever the condition was diagnosed as certainly tubercular from its clinical aspects. As a corollary of this it is stated that the remedy will form an indispensable *aid* to diagnosis, and in this I am disposed to agree. The cases in which its use will be called for, for this purpose, will be few, but as examples I may refer you to cases No. 2, 31, and 22. I must, however, again remind you that I do not accept mere feverish disturbance as diagnostic, but that with it local change must also be associated.

In case 2 the diagnosis lay between epithelioma and lupus, and it was evidently undesirable to do thyrotomy if the latter condition was present. The absence of any local reaction excluded lupus.

In case 31, in which a complete diagnosis could not previously be made, and in which local treatment did no good, injections gave rise to local reaction, thus clearing up the diagnosis, and at the same time to great improvement in the voice.

In case 22 the diagnosis of tubercular bone mischief was absolutely established by the local reaction.

The fifth proposition, that in lupus, joint, bone, and gland tubercle the first dose of the remedy may be 1 cg., requires, I think, considerable modification; but that it can be given in rapidly increasing doses is, I believe, true in all cases. Whether this rapid increase is desirable is another question, which greater experience alone can answer. The question of dose is so important that I must take up a little of your time in discussing it and the way in which the injections are arranged.

At the General Hospital we are in the habit of using three dilutions of the original fluid—one in which the dilution is 500 times, a second in which the dilution is 100 times, and a third in which the dilution is 10 times, each of these being made with a ½ per cent. solution of carbolic acid. This amount of carbolic acid does not appear to diminish the efficacy of the fluid, and the solution keeps good for some weeks without boiling or other precaution. The doses are administered with a hypodermic syringe, graduated in cubic centimetres and fitted with an asbestos piston that it may be easily cleaned.

In surgical diseases I think it is wise to commence with a dose of 1 mg. for adults and half that quantity for children, or even less if the children be feeble or very young. One can never foretell with any certainty whether in any given case the constitutional disturbance will be severe or not, and having thus felt one's way, it is easy to increase the dose until some definite conclusion is arrived at. The doses should be increased gradually and so as to produce but a moderate amount of fever, and they should be continued, I think, either till the lesion is healed or, at all events, so long as there is any local change produced by the injections. The earlier doses give rise to much more constitutional disturbance than the later, and, as a rule, after 2 cg. have been reached, the patients have little discomfort. A word of caution is necessary as to the increase of the early doses. It is not rare to find that the second and third injections of the same amount as the first—say, for instance, 2 mg.—may give rise to more constitutional disturbance than the first administration of that quantity.

Another point for consideration is to what extent the doses may be increased. Several of my patients have attained to a decigramme, and some to more than that, and I am at present unable to assign any limit.

Several of the cases earliest treated, and who suffered very little from these large doses, are now coming up once a week as out-patients for an injection, they being enjoined to go home to bed after receiving their dose; but I should strongly object to administering the earlier doses to out-patients.

We come now to the sixth proposition, and here it is necessary to keep very closely to Koch's own words, they are that "a speedy cure may be obtained in recent and slight cases of lupus, glandular, bone, and joint tuberculosis, and slow improvement in severe cases."

On referring to my reports of cases you will find that they are divided into several groups, and it seems to me that the most suitable method of probing this momentous statement of Koch's is that I should draw your attention to the various classes of cases, commenting on the most interesting features.

The joint cases, thirteen in number, in the reports 7 to 19, comprise seven cases of hip disease, all of them of long standing. Case 10, the patient under treatment for the shortest time, and case 11, shew no improvement; all the rest are improved, especially cases 7, 12, and 13, to whom I wish to direct your attention.

Case 7 has been laid up by his disease for five years, the last year he has been confined to bed, with profuse suppuration and severe pain; the suppuration is now almost abolished, the pain is gone, and he will get up as soon as his Thomas' splint is ready.

Case 12 was anæmic to a degree, and suppurating profusely, in fact he had been going to the bad for some time; since injection his general condition has greatly improved, and his suppuration is not a fourth of what it was. I want you particularly to note that he suffered four months ago from severe erysipelas, which not only had no favourable influence on his hip, but made it much worse.

In case 13 there is similar great improvement: a very important fact when we remember his advanced amyloid disease.

Case 14, sacro-iliac disease, is also greatly benefited, as you will see by the report of his case.

Cases 15, 16, and 17, are examples of ankle-joint disease. Case 15 you will notice had also mischief in the left wrist and phthisis; her joints have not benefited at all, but the mischief was advanced in both joints, and her general condition was bad. Case 16 benefited but slightly, so I scraped and drained his ankle, subsequently resuming injections, of the effect of which it is yet too early to say much. Case 17 is somewhat improved.

Case 18, wrist joint mischief has, I believe, benefited greatly. You will see that the operation freely opened up the wrist joint and that this was followed by suppuration extending to the front of the wrist. With the injections the openings healed up in six weeks, the swelling of the joint is steadily subsiding, there is no pain now; such is not one's usual experience in this complicated joint.

Case 19, elbow joint mischief with lupus and affection of the bones of the hands, is the earliest joint case I have treated. In the short time, five weeks, since injections were commenced, the swelling of the elbow joint has practically disappeared, and the movements are almost as free as they should be. The bones of the hands have also much improved.

Of the five bone cases, Nos. 21 and 22 have distinctly improved, and the latter is of considerable interest from a diagnostic point of view, having been regarded and treated as syphilitic, despite which the mischief extended. In case 20 it is of course open to question whether tuberculine or operation was most concerned in producing the cure. Cases 23 and 24 do not appear to have derived any benefit.

The gland cases, three in number, have given most satisfactory results. Case 25 appears to me to be cured; but in such it is likely that some slight thickening of the part may linger for a time, due to the unabsorbed and thickened gland capsules. Case 26, with other tubercular mischief besides that in the glands, is one of those not well suited for operation owing to the widely desseminated gland affection, and the result of injection has been marked improvement. Case 27, tubercular glands in the popliteal space with old sinuses are cured, and this with rapidity. It will be noted that the os calcis was also diseased and had been operated on. The contrast between the healing process in this bone before the injections and after is enormously in favour of the latter, indeed I have never seen repair there so rapid, and the heel is now perfectly sound.

I should like to direct your attention to the glands in case 22 where they were affected in addition to bone. The effect of injection was to excite suppuration, and if this should occur in the chest or abdomen very unpleasant results might follow, but so far I have seen no such cases reported.

Case 28 is the only case with tuberculosis of the urinary passages that I have had the opportunity of injecting. Doses of 1½ mg. produced sharp general and local disturbance, and there was considerable increase in the amount of pus for some time. I hesitate to say what amount of improvement, if any, exists; but there is one thing well worth noting, viz., that the patient is gaining weight. Suppuration still continues, and is likely to for some time however effective the remedy may be, as there are doubtless considerable excavations in the kidney, and on the bladder mucosa probably, which have to be filled up and obliterated by scar tissue before healing is secured.

Under the heading Laryngeal Tubercle, commencing at No. 29, only three cases are grouped; but in Case 26 there was laryngeal as well as gland tubercle, and I have observed other cases of laryngeal tubercle with phthisis in our wards, for instance, No. 15. In no case has there been cure, but in every one such improvement as I have never seen from any other treatment; and it is yet too early to say that cure will not follow in some of the cases. Case 31 is of extreme interest from a diagnostic as well as from a curative point of view. It is of importance to recall that in none of these cases, nor in those of lupus of the larynx (to be presently mentioned), was there any stenosis of the larynx requiring surgical measures for its relief, though if some of the lupus cases had received a dose of 1 cg. to begin with this might well have arisen. In such an emergency I should strongly urge intubation rather than tracheotomy.

In that rather ill-defined group aggregated under the term Lupus there are thirteen cases, beginning at 32, and a fourteenth example is supplied by Case 19. Most of these patients have been submitted to your inspection to-night, with drawings illustrating their condition before treatment, and they are so extremely interesting that, but for the scarcity of time, I should like to dwell upon them at length.

Of the fourteen cases, two may be described as slightly improved, eight as considerably improved, and four as much improved. I hesitate to use the word cure in connection with case 39 because of the remarkable tendency there has been in this patient to recurrence after operation, but at present the disease seems quiescent. The next best cases are 38 and 42, in each of which there is still some active disease, which is, however, slowly subsiding. Case 37 was shewn at this Society before treatment was commenced so that it is possible to contrast her present condition with that previously existing. The alternative treatment to tuberculine would have been free excision of the diseased area on the palate and the gums, and this would have involved the sacrifice of the front teeth.

It is an interesting fact that in five of the fourteen cases, lupus existed on the mucous membrane of the mouth or adjacent parts; in cases 34, 35 and 37, the larynx was extensively involved. This points to the wisdom of examining these parts carefully before injection. The effect of treatment on these parts was about the same as on the surface lesions of the same patients. Comparing lupus of the larynx with ordinary tubercle there, the effect of treatment is to give rise to less active changes in the affected area, especially there is less tendency to ulceration.

In what particular variety of lupus, tuberculine will be most effective, is to a great extent still doubtful, but at present I regard the more superficial lesions, such as existed in case 38, as most amenable, the more distinctly subcutaneous ones, such as in case 33, as less amenable to the treatment.

In three cases, finding that some of the diseased patches seemed at a standstill, I used the lupus scraper to get rid of them, and I think it is probable that in the future operation and the subsequent use of tuberculine will often go together. Case 44 is an interesting one from this point of view, as it will be seen that the disease rapidly returned in the area scraped; whether a continuance of injections after the scraping would have prevented this recurrence is a question to be answered by further experience. The tendency at present is to regard tuberculine as a certain remedy for lupus whatever else it may fail to cure. My own belief is that we are not yet masters of the situation with regard to that inveterate disease, but that its *recurrence* will still be our bane in a large proportion of cases,

A few general comments remain to be made. It is unnecessary to recall the fact that tuberculine will not remove dead tissues, as for instance a sequestrum in bone, and that consequently sinuses will remain open, although no actual tubercular mischief exists; it is likely however that the remedy will promote separation of sequestra from the living tissues with which they are still connected.

Other methods of treatment, such as splints for joints, should not be neglected, and this is especially true of those measures which improve the patients' nutrition. Indeed I regard the state of any patient's nutrition as a most important factor in his well-doing under Koch's treatment; and speaking generally, I should say that evidence of feeble reparative power is at present a reason for withholding injections in any given case

It is a very general experience that in the early days of treatment by tuberculine, patients lose weight. On looking at the reports of my cases, it will be seen that in many of them the weight before treatment was commenced and the weight at the present time are given, and it will be noticed that nearly all have eventually more than made up for the weight lost—a matter of great importance.

Another point worth attention is the rapid healing after operations for tubercular disease when tuberculine is injected, even though no active mischief appears to have been left.

But very few of my cases can be described as "early and slight cases of tubercular disease." Such examples as I have seen, on the whole, go to confirm Koch's statement that such can be cured by his remedy. In the advanced cases, such as some of the joints I have mentioned, there has undoubtedly been vast improvement, especially in those cases where the surgeon hesitates to interfere, because if he does, in operating, he must necessarily destroy what amount of repair already exists. ***Should the improvement already obtained in the cases before you prove permanent,*** I do not hesitate to say that we have reason to be profoundly grateful to Koch for the remedy he has placed in our hands.

In conclusion, it is only right to mention that in not one of the cases for which I have been responsible has there been such constitutional disturbance as to call for real anxiety; and of the several hundred injections given not one has caused an abscess.

I have to offer my sincere thanks to my colleagues, the physicians and surgeons of the General Hospital, for the liberal way in which they have placed cases at my disposal for the purpose of this investigation.

CASES INJECTED MAINLY FOR DIAGNOSTIC PURPOSES.

No. 1.—A. H., f., 6 years old. Epiphysitis great trochanter, about five weeks' duration. Injection of half milligram on Dec. 27th, 1890. At this time there was marked swelling and tenderness over the left great trochanter with limitation of movements of left hip-joint. Four injections were given, the last of 5 mg. on Jan. 5th, but there was neither general nor local reaction on any occasion. The child was kept at rest in bed with weight extension, and was discharged quite well on Jan. 25th.

Conclusion drawn, that the disease was not tubercular. This is confirmed by the fact that the trouble commenced with a rigor and high temperature on Nov. 28th, and that recovery took place in such a short time.—P.

No. 2.—U., m., 37 years. Thickening of left vocal cord, possibly early epithelioma, possibly lupus; about four months' duration; 1st injection, 1 mg. on Jan. 12th, 1891; 2nd injection, 3 mg. on Jan. 14th; 3rd injection of 6 mg. on Jan. 17th. This was followed for first time by a temperature of 100·8 with malaise, but repeated examinations with the laryngoscope after each of the injections failed to shew the faintest local changes. Subsequent thyrotomy shewed the condition to be a leucomatous patch on the vocal cord.

Conclusion drawn, that the absence of local reaction justified one in saying that this was not a tubercular condition. This was confirmed by the operation.—P.

No. 3.—C. D., f., 30 years. Keloid of right shoulder; about three years' duration. 3 mg. were injected on Jan. 16th, 1891; 6 mg. on Jan. 18th; 1 cg. on Jan. 20th; on no occasion was there any general or local reaction.—P.

No. 4—H. R., f., age 26, skin lesion of face of doubtful nature, (?) Syphilis or tubercle, four months duration. The patch was about two inches long by 1½ inch wide, diffusely red, with some distinct nodules in it, no ulceration. Considerable doses of iodide of potassium, alone and combined with mercury were given without any change. Jan. 26th, first injection of 2 mg. gave no reaction, and it was only when 1 cg. was reached that general reaction was obtained, but the existence of local reaction even then was very doubtful and has remained so, although 5 cg. has been administered as a dose. Weight before injection 7 st. 9 lbs., now 7 st. 7½ lbs. The patient thinks her skin lesion is improved, but this is doubtful. The colour of the patch varies remarkably; at times it is comparatively pale, at others deep red. Injections are now discontinued.—P.

No. 5.—E. D., f., 48 years. Rodent ulcer of face, said to have commenced as lupus about 16 years ago. Scraped eight times, freely excised twice. When injection was first made the disease shewed an ulcer nearly the size of one's palm, involving the superior maxilla, its edges were everted and indurated, in two spots it shewed attempts at cicatrization; there were no enlarged lymphatic glands. The first injection of 1 mg. was given at *noon* on March 30th; the sore examined 9 hours later, 24 hours later, and 48 hours later shewed no local change whatever, although the temperature rose to 101. The second injection of 2 mg., on April 2nd, produced a temperature of 101·4, but there was no local change 24 hours after. The third injection of 3 mg., on April 5th, produced a temperature of 103, but there was no local change 20 hours and 30 hours after.—P.

No. 6.—R. H., m, 15 years. Old burn of leg, duration sixteen months. Extensive scars of right thigh, leg, and foot. An indolent ulcer 2½ inches long and 1¾ inches wide in centre of right calf, with irregular, unhealthy granulations. First injection on March 20th, 1 mg.; no reaction general or local. Second on March 23rd, 2 mg.; slight rise of temperature (100), no local reaction. March 26th, 4 mg.; followed by severe general reaction, temperature 104, shivering, headache, etc. No change in appearance of wound, except an increase in quantity of discharge the next morning There has been no increased healing power.

CASES OF TUBERCULAR JOINT DISEASE.

No. 7.—H. P., m., 25 years. Hip disease, duration about five years; no excision. When injections were commenced the limb was as follows:—1 inch shortening, very limited movement, one sinus, and one extensive wound 4¼ inches long, from both of which there was *profuse suppuration*; great thickening of the soft tissues around; *severe pain* in joint. First injection of 1 mg., on Feb. 6th produced temp. of 103·6 with local reaction. Total number of injections 20; largest dose 16 mg. Duration of treatment 63 days.

Result.—The large wound and the sinus are more than half healed, the suppuration is reduced four-fifths, the thickening around the joint has greatly diminished, pain has disappeared, and the patient is to get up shortly, after a year in bed.

No. 8.—N. H., m., 5 years. Morbus coxæ, duration eighteen months. Excision of joint, Oct. 17th, 1890. Condition when injections were commenced :—Sinus on outer side of trochanter and excision wound; ¾ inch shortening of limb; marked thickening around trochanter; suppuration very moderate. First injection on Feb. 15th, of ½ mg., followed by no general reaction, but a crop of vesicles and erythematous rash around wounds. First general reaction, with temperature of 101·6, after 2 mg. Number of injections 10. Largest quantity given 9 mg. Duration of treatment 54 days. Weight before injections 2 st. 5 lbs.; after, 2 st. 6½ lbs.

Result.—Discharge slightly diminished.

No. 9.—L. S., m., 8 years. Morbus coxæ, duration fifteen months. Excision of joint, May 13th, 1890. Condition when injections were commenced—1 inch of shortening, movements very limited; three sinuses and anterior excision opening; very moderate suppuration; soft thickening round joint. First injection on Feb. 6th of half mg., producing no general reaction, but distinct local change, consisting of erythematous rash around the wounds and increased discharge. After second injection of 1 mg., complained of feeling of pins and needles about the wounds; temperature rose to 100 three hours after injection. Number of injections 19. Largest quantity given 3 cg. Duration of treatment 63 days. Weight before injections 3 stone 2¼ lbs. After, 3 stone 2½ lbs.

Result.—Sinuses healing, suppuration somewhat diminished.

No. 10.—A. F., m., 13 years. Morbus coxæ, duration fifteen months. Joint excised, Oct. 31st, 1890. When injections were commenced there were two sinuses and the excision wound a large gaping aperture, 3¼ × 1½ inches; profuse discharge from all these. Considerable swelling and thickening around joint, the pus apparently infiltrating the whole of the inter-muscular tissues; the condition appears to be mixed septic and tubercular. On March 4th, injected with 1 mg. Temperature reached 103 seven hours after injection, no pain or change in wound. Number of injections 11. Largest quantity given 5 mg. Duration of treatment 37 days.

Result.—No improvement, no extension of mischief. General condition the same.

No. 11.—M. W., f., 7 years. Morbus coxæ, duration nearly three years. No excision. Condition on commencement of injections:—1 inch of shortening in limb; movement extremely limited; four small sinuses from which there was moderate suppuration. On Feb. 13th, first injection of half mg., followed by a rise of temperature to 100·4, but no other symptoms of general reaction or any local change. Number of injections, 15. Largest quantity given 3 cg. Duration of treatment 56 days.

Result.—No improvement.

No. 12.—J. H., m., 11 years. Morbus coxæ, duration 19 months. Joint excised June 12th, 1890. When injections were commenced the limb was as follows:—Much thickening around joint, and œdema of whole limb. There are some half dozen sinuses around the joint, including excision wound, with raw surface of 1½ inches length. Discharge profuse. First injection on Feb. 8th of ½ mg. Amount of discharge less next morning, slight blush, no pain in joint, no general reaction. Number of injections 18. Largest quantity given 16 mg. Duration of treatment 61 days. Two months before the treatment commenced the patient had an attack of erysipelas; the amount of suppuration was increased rather than lessened as the result of this.

Result.—Most of the sinuses and the excision wound have healed considerably, the discharge has greatly lessened, the boy's general condition is much improved.

No. 13.—H. W., m., 8 years. Morbus coxæ, duration 3 years. Joint excised, and subsequently amputation at hip July 1st, 1890. When injections were commenced stump was as follows: Stump riddled with sinuses, and when pressed between the hands, pus oozed out as if the tissues were made of sponge; also collects above Poupart's ligament. Progressing amyloid disease of liver and kidneys. Discharge very profuse and offensive. First injection of ½ mg., on Feb. 15th, produced no reaction; 1 mg. produced a general reaction, with temperature of 100·6. The first local reaction observed was after injection of 4 mg., and consisted of increased amount of discharge, which was sanguineous. Number of injections 17. Largest quantity given 9 mg. Duration of treatment 54 days. Weight before injection 1 st. 11 lbs. Present weight 1 st. 13 lbs. Patient had remained at 1 st. 11 lbs. for some weeks before injection.

Result. — Great diminution of suppuration, thickening of stump less, sinuses healing, general condition improved.

No. 14.—A. R., m., 8 years. Sacro-iliac disease, (?) duration 2 years. When injections were commenced there were two large granulating wounds, one over great trochanter 4 in. long, the other over the left sacro-iliac joint 2½ in. long, with a sinus 2 in. deep leading apparently into joint. The suppuration was profuse. No rigidity; no pain. On February 15th injected with ½ mg. Distinct but delayed reaction after $\frac{1}{10}$ mg. Temperature reaching 103. Locally diminished suppuration. Number of injections 17. Largest quantity given 1½ mg. Duration of treatment 54 days. Weight before injections 2 st. 13 lbs.; after, 2 st. 12 lbs.

Result.—The wounds are two-thirds healed; the profuse suppuration is reduced to a very small amount. Altogether, the improvement is great.

No. 15.—R. V., f, 19 years, tubercular arthritis, left ankle, tarsus and wrist, phthisis, laryngitis. The ankle appears to have first given rise to trouble about three months before admission, in six weeks abscesses opened spontaneously. When treatment was commenced the ankle was suppurating a good deal, and there were tubercular ulcers over the ankle and tarsus; the wrist was swollen and fluctuating on dorsum, both joints were very painful. Phthisis well marked at right apex; larynx generally injected, especially on inter-arytenoid fold and along outer margin of left vocal cord. Injection of 1 mg., on Dec. 31st, gave general and local reaction. Total number of injections, 27, largest dose given 12 mg.

Result.—At first rapid cicatrization of ulcers on foot; then increase of suppuration in tarsal joints; foot amputated on January 30th. Wrist at first shrinking, subsequently extension of suppuration, and, on March 14th, evacuation of large abscess, the carpal bones being carious; this joint requires amputation. Larynx improved. Injection was followed by ulceration to the left of inter-arytenoid fold, this has since healed, and there is less vascular injection. Dr. Wilson states that on the whole the lung condition is not worse than it was before injection. During the last six weeks the patient has lost 2 lbs. This patient was regarded as an unfavourable one from the first, but the injections do not seem to have hastened the advance of her disease.—P.

No. 16.—G. H., m., 28 years. Tubercular arthritis of left ankle, duration about 7 months. Treated by fixation and rest, steadily getting worse. When injections were commenced, there was much thickening all round the joint, the foot was extended, very fixed, and all attempts at movement were painful; there was no evidence of suppuration (see cast). No distinct local or general reaction until 1 cg. was given on January 4th, and throughout, the reactions have been very mild. Total number of injections, 26; largest dose, 1 dg. Weight before injections, 9 st. 8 lbs.; now 9 st. 3 lbs. On March 21st, as the joint had but slightly improved, and was at a standstill, it was incised, drained, and partly scraped out, injections being then resumed. Since the operation, there has twice been more pain in the joint after injection, but there has been no feverish disturbance. Duration of treatment, 100 days. Looking to the loss of weight, and the doubtful improvement in the joint, the result is not satisfactory.—P.

No. 17.—K. C., f., 21 years. Tubercular arthritis of left ankle, two years' duration, treated by rest, fixation, and counter-irritants. There was swelling in front of the ankle-joint, and round both malleoli, much tenderness on pressure, and pain on every movement; the foot was somewhat extended on the leg, no sinus, the leg muscles extremely wasted. First injection of 1 mg. on March 18th, 1891, gave neither local nor general reaction. Distinct general and local reaction to 4 mg. on March 23rd. Number of injections, 8; highest amount administered, 7 mg. Weight before injection, 8 st. 5 lbs.; now 8 st. 2¾.

Result.—The duration of treatment—22 days—is too short to allow of any very marked results, but the movements are certainly less painful, the joint is less tender, and there is slight diminution in the measurements of the affected part.—P.

No. 18.—J. G., m., 18 years. Tubercular arthritis of left carpus and metacarpus, commencing as an osteo-myelitis of 3rd metacarpal about five years ago. September, 1890, the interior of this bone was gouged out, and the cavity was nearly healed, but then broke out again. Before injections were commenced there was a sinus over the 3rd metacarpal leading to dead bone; there was a swelling involving the ends of 2nd, 3rd, and 4th metacarpals, and the carpo-metacarpal joints, and the movements of the wrist joint proper, were limited and painful. On February 17th, some carious bone was removed from the metacarpal and carpal bones; this was followed by suppuration, and pus was let out from the front of the wrist. Subsequently distinct local and general reaction was obtained with 2 mg. on Feb. 22nd, since which time injections have been regularly continued, 15 having been given. Largest dose 1 cg. Weight before injection, 6 st. 11¼ lb., now 7 st. 3 lb. Duration of treatment 47 days.

Result.—The operation wound and the openings subsequently made in front and at the side of wrist healed in five weeks; the thickening over the carpus and metacarpus is steadily lessening; the tenderness is gone. The joint may be described altogether as much improved.—P.

No. 19 —A. E., f., 13 years. Lupus nose, forearm, and fauces, tubercular *disease of elbow*, metacarpal bone, and phalanges, about eighteen months' duration. When injected, two crusted nodules on nose, a patch on forearm 1½ inch diameter, eyelid puckered from four previous operations for lupus, left elbow swollen, limited in movement, especially in extension, and tender, bones of hands enlarged and tender. First injection of ½ mg., on March 9th, gave rise to sharp general and local reaction. Total number of injections 11; largest dose 3 mg. Weight before injection 5 st. 10 lbs.; after, 5 st. 12 lbs. Duration of treatment 34 days.

Result.—Elbow almost free from swelling, movements hardly at all limited, no tenderness now, bones of hands considerably less swollen, lupus patches much better.—P.

CASES OF TUBERCULAR BONE MISCHIEF.

No. 20.—W. B., m., 19 years. Tubercular epiphysitis of left femur, two years' duration. Incised and scraped on Dec. 9th, 1890. First injection of 1 mg. on Dec. 27th, the wound then looking like a tubercular sore; it was 2¾ inches long by ¾ inch wide. Mild general and local reaction was produced by 3 mg. In all 12 injections were given, 1 cg. on Jan. 20th, failing to give reaction, when treatment was discontinued.

Result.—The wound was soundly healed on the 12th day after the first injection, and the measurement round the condyles in three weeks was the same as on the opposite side. At the time of operation it was an inch more. How much of the improvement was due to the operation, and how much to injection, it is difficult to apportion. The healing was most rapid after injections were commenced.—P.

This case was reported in extenso, *Birmingham Medical Review*, February, 1891.

No. 21.—C. T., m., 18 years. Tubercular periostitis of ribs, several years duration; no operations. When first injected, a sore on front of left chest, 1⅝ inch long by ¾ inch wide, with some boggy thickening under pectoral muscles into which a probe passed, but did not feel bone, also a sinus of some depth on left anterior axillary fold. First injection of 1 mg. on March 11, gave no reaction, on March 15th there was distinct local reaction to 6 mg., and on March 17th with injection of 1 cg., there were both local reaction and general, the temperature being 102. Total number of injections 14. Largest amount administered 6 cg. Weight before injection 8 st. 10½ lbs., now 9 st. 2¼ lbs.

Result.—Steady diminution of the boggy thickening under the left pectoral muscles with increased suppuration, which is now subsiding. Duration of treatment 26 days.—P.

No. 22.—A. M., m., 18 years. Tubercular necrosis of cranium, tubercular ulcers on chest, (?) Periostitis of ribs. Tubercular glands. The cranial mischief of 18 months duration, that on the chest wall has existed several years. When injected there was a circular perforation through both layers of the frontal bone, about the size of a shilling, at the bottom of which the dura pulsated freely, there was an undermined area around, about 3 inches in diameter, from which numerous sinuses discharged pus, particles of bone occasionally separated, enlarged glands over each zygoma and in each sub-maxillary region; on the chest were four slowly healing sores of irregular size and shape. The first dose of 1 mg., on March 8th, gave rise to a most characteristic general and local reaction. The total number of injections has been ten, the largest dose 3 mg. Duration of treatment—35 days. Weight before injection 8 st. 8 lbs, now the same.

Result.—The glands over the right zygoma and the left sub-maxillary region have suppurated. The discharge from the sinuses on the forehead is steadily diminishing, and the perforation in the frontal bone which was extending is now filling up. The sores on the chest are now practically healed.—P.

No. 23.—A. R., f., 14 years. Tubercular disease of head of tibia, duration 11 months. Bone trephined September 10th, 1890. Condition when injections were commenced was as follows:—Over inner side of head of left tibia there is a scar which is dry, although it was discharging a few days ago; above and a little anterior to this there is a diffuse swelling and tenderness. There is a little thickening of the tibia, girth being half an inch more than on the other side. First injection, on Feb. 8th, of 1 mg. produced temperature of 100·2, and the wound started suppurating. Complained of headache and feeling unwell, with temperature of 101·6, six hours after injection with 5 mg. Number of injections 14. Largest quantity given 3 cg. Duration of treatment 61 days. Weight before injections 6 st. 2½ lbs.; after, 6 st. 2 lbs.

Result.—It is doubtful if any improvement has resulted from the injections.

No. 24.—H. T., m., 27 years. Psoas abscess; duration 6 years. When injections were commenced there was a sinus in right groin, through which a probe passed seven inches upwards and backwards to a spot opposite right hypochondriac region, from which there was a quantity of discharge, and severe pain deep in right hypochondriac region. First injection of 1 mg., on February 6th, produced no rise of temperature; no local reaction. There was slight but distinct reaction, general (T. 100·4) and local blush and pain, after a second dose of 2 mg. Total number of injections 18; largest dose given 8 cg. Weight before injections 9 st. 7¼ lbs.; after, 9 st. 10¾ lbs. Duration of treatment 63 days.

Result.—Some diminution in discharge and gain in weight.

CASES OF TUBERCULAR GLAND MISCHIEF.

No. 25.—J. F., m., 17 years. Tubercular glands in neck, about five years' duration, one incised. When first injected there were several glands enlarged and producing a mass the size of a small orange; one appeared to be breaking down, and over another there was a discharging sinus. The first injection of 2 mg. on Dec. 29th produced no distinct reaction locally, but there was elevation of temp. to 101·5; 4 mg. on the 31st Dec. produced considerable swelling of the affected glands; and 8 mg. on Jan. 2nd produced sharp general and local reaction. Total number of injections 28; largest dose given 1 dg. Treatment was interrupted in this case for three weeks by an injury to patient's head. When injections were resumed the glands were very much less, and no reaction was obtained from 1 cg. nor from rapidly increasing doses up to 1 dg. Duration of treatment 71 days.

Result.—The enlarged glands, except the lymphatic over the tonsil, have disappeared. The scar of the small incision is free from puckering.—P.

No. 26.—G. W., m., age 41. Tubercular glands in neck for some years, especially troublesome during last twelve months; chronic laryngitis, (?) tubercular, slight phthisis right apex (?)

When injected, some of the glands had suppurated, others were commencing to, and some not. The larynx was as follows:—both cords, red and ulcerated at posterior extremities, thickening and doubtful ulceration on inter-arytenoid fold, dry adherent mucus on both the above-mentioned parts. The first injection of 1 mg., on March 8th, gave a fair local and general reaction. Total number of injections, 14; largest amount given, 3 cg. Weight before injection, 9 st. 2½ lbs.; now, 9 st. 1 lb. Duration of treatment, 33 days.

Result.—Marked improvement in all the glands. Larynx, much improved, free from mucus; cords paler, and almost healed.—P.

No. 27.—J. P., m., 8 years. Tubercular disease of os calcis and of popliteal glands. Duration, 16 months. Cavity in bone scraped out December 17th. Condition on commencement of injections:—On outer side of right foot, large wound leading into a cavity in os calcis, size of small walnut. Sinus on inner side of left femur, a little way above knee, and another in popliteal space, with gland thickening. Also, old ulceration in left groin, now dry. First injection, on Feb. 6th, of two-fifths mg., followed by no general reaction, but slight erythematous rash around wounds, no pain, no change in amount, or character of discharge. Number of injections, 13; largest quantity given, 1 cg. Duration of treatment, 56 days. Weight before injection, 2 st. 9 lbs.; weight after, 2 st. 12 lbs.

Result.—The sinuses about the popliteal space healed rapidly, the thickening has disappeared, and the os calcis has healed soundly.

TUBERCULOSIS OF URINARY ORGANS.

No. 28.—S. P., f., 33 years. Tubercular disease of bladder and kidney, duration about 9 months. When injections commenced patient's condition was as follows: patient complained of shooting pains in right lumbar region, some scalding in urethra, no incontinence. *Urine* contained a sediment of about ʒv. of pus in the 24 hours; acid, no blood. With *Cystoscope* on posterior wall a vascular area, 1½ to 2 inches diameter, surface abraded but not deeply ulcerated, and from this particles of pus are constantly being shed. On floor, especially the anterior part of trigone, are numerous nodules semi-translucent and pink in appearance but not ulcerated. First injection, on February 6th, of 1 mg. produced temperature of 100, 10 hours later, preceded by profuse sweating, flushing of face and pain in right lumbar region. The next evening at the same time temperature rose to 101 and patient complained of increase of pain on micturition; 1½ mg. produced some severe reactions. Number of injections, 19; largest quantity given, 1 cg.; duration of treatment, 63 days; weight before injection, 8 st.; after, 8 st. 3 lbs.

Result.—The suppuration was considerably increased for the first month and occasionally at intervals now is more than it was, but the presence of mucus makes it difficult to estimate the pus except roughly. The most noticeable feature in the case is the variation in weight, from 8 stone she dropped to 7 st. 5 lbs., but now has regained this and has added 3 lbs.

Cases of Laryngeal Tubercle.

No. 29.—F. O., m., 29 years. Tubercular laryngitis, phthisis, duration of former about seven months. Condition of larynx before injection: inter-arytenoid fold swollen and reddened, there is a warty patch in the middle of it from which a cresentic fold passes down on either side inclosing an ulcerated area, both cords pink and thickened, the pink margin of each being frayed; there is redness and swelling over the anterior part of the cricoid. The first injection of ½ mg. produced no change, but 1 mg. on March 15th gave rise to temperature of 101·3. The larynx was not examined then for local reaction, but on March 22nd, there was distinct local change, including ulceration of the thickening over the cricoid. Total number of injections 10; largest dose 1 mg.; duration of treatment 32 days. Weight before 8 st. 11½ lbs.; after, 8 st. 11 lbs.

Result.—General slight improvement in all parts of the larynx. The swelling noted over the cricoid ulcerated, and has now healed again.—P.

No 30.—G. I, m., 32 years. Tubercular laryngitis, phthisis, duration of former about four months. Condition before injection:—Left ary-epiglottic fold much swollen, pale grey in colour, and œdematous, much thickening of ventricular band on left side, which is partly hidden by adherent mucus, the left vocal cord is hidden by the v. band, and the left arytenoid is quite fixed. The first injection of 1 mg., on March 19th, gave no general reaction, and it was only when 8 mg. were given that the temperature rose to 100·7; and as I saw the patient only occasionally I am unable to say anything about the local reaction. Total number of injections 14; largest dose 8 cg. Duration of treatment 22 days. Weight before treatment 8 st. 6¼ lb., now 8 st. 5 lb.

Result.--Ulceration of ventricular band and adjacent part of ary-epiglottic fold, which is now healing again. The ary-epiglottic fold is less swollen, and there is distinct movement of the left arytenoid cartilage now.—P.

No 31.—K. H., f., 28 years. Chronic laryngitis, (?) tubercular, about 2½ years' duration. When treatment by tuberculine was first commenced the condition of larynx was as follows:—Both cords very pink, with velvety thickening; on phonation, failing to meet in posterior half; some ill-defined thickening on inter-arytenoid fold; slight redness and thickening over left arytenoid; no ulceration anywhere; marked aphonia; no evidence of tubercle in the lung. First injection of 2 mg., on January 18th, caused slight increase of redness, and sense of discomfort, but there was no fever until 1 cg. was given on the 22nd, but after all the earlier injections pain and dryness in the larynx was complained of, and aphonia became more marked. On Jan 28th, ulceration was found on the inter-arytenoid fold, just above each vocal process. Total number of injections 19; largest amount given 5 cg. Weight on admission, 8 st. 2½ lbs.; now 8 st. 4 lbs.

Result.—The thickening on the inter-arytenoid fold and over the left arytenoid has disappeared, the cords are considerably paler; the aphonia has given place to a very fair speaking voice.—P.

CASES OF LUPUS.

No. 32.—E. J., f., 16 years. Lupus of nose, fauces, eyelid, and tubercular nodule of iris. Duration about two and a half years. Diseased parts scraped on two occasions. Condition when injections were commenced. — *Nose:* Lower half was occupied by dirty red irregular tubercles covered with dried yellow discharge, also right side and centre of upper lip similarly affected. *Right eye:* Marginal keratitis with small white infiltrations and new vessels on cornea, general iritis, and a small nodule on lower surface of iris. Muco-purulent discharge from lachrymal sac, yellowish white raised patches size of pin's head to nearly half a pea on conjunctival surface of upper lid; general injection of conjunctiva. *Pharynx and Larynx:* Uvula affected by previous destructive changes. On left post pillar of palate and right tonsil active changes—thickening and ulceration. Doubtful fulness and secretion on inter-arytenoid fold of larynx, slight cicatrisation on posterior wall of pharynx. Tonsillar lymphatic glands enlarged on both sides. First injection of 1 mg., on January 20th, caused a very marked general (T. 103, vomiting) and local (pain in eye and nose, with increased secretion, swelling, and red areola) reaction. Number of injections 25; largest quantity given 4 cg. Duration of treatment 80 days. Weight before injections 8 st. 3¾ lbs.; after, 8 st. 11½ lbs.

Result. — Nose moderately improved; fauces moderately improved; eyelid moderately improved; eye much improved—the superficial and deep congestions have disappeared, and the nodule on the iris is represented only by an adhesion.—P.

No. 33.—M. E., f., 22 years. Lupus of forearm and hand, subcutaneous. Duration, 21 months. Condition when injections were commenced:—A large patch over dorsal aspect of 4th and 5th metacarpal bones of left hand, containing raised nodules, some with small yellowish centres; another large patch over posterior, ulnar aspect of arm at the elbow. There are some similar small patches on the posterior aspect of the forearm. First injection of 1 mg., on Dec. 27th, produced slight general

(T. 100, pain in back) and local (redness, increased tenderness) reaction. The injections were continued until January 24th, fourteen in all being given; largest dose, 5 cg. These injections were discontinued, as all patches seemed quiescent. They were resumed on February 25th, with dose of 5 mg., as fresh nodules were noticed at the bend of elbow and on the forearm, anterior surface. Number of injections after the interval, 11; largest quantity given, 7 cg. Duration of treatment since, 44 days. Weight on February 9th, 7 st. 2½ lbs.; now, 7 st. 8 lbs.

Result.—On April 1st, as there appeared to be no improvement in some of the nodules, and as others, apparently fresh ones, were discovered, all these were erased; these nodules were entirely subcutaneous. Many of the patches, active before injections were commenced, appear to be cured by the remedy. The patient has become quite stout.—P.

No. 34.—S. W., f., 30 years. Lupus of nose and cheek, rather erythematous in character, five years' duration. Three operations; ulcerating lupus now on hard and soft palate and uvula; epiglottis and inter-arytenoid fold involved. Doubtful phthisis right apex. First injection of 1 mg. on January 24th, gave good local and general reaction. Total number of injections 24; largest quantity given 6 cg. Weight before injection 7 st. 3 lbs.; now 6 st. 11 lbs. Duration of treatment 76 days.

Result.—The patch on the cheek is improved, the nose and palate only slightly so, the larynx is also a little better.—P.

No. 35.—L. S., f., 17 years, Lupus of neck, about two-and-half years' duration, following glandular suppuration, doubtful patches on knee and shoulder. Lupus of hard and soft palate; epiglottis, ary epiglottic fold and ventricular band on left side, First injection of 1 mg, on February 17th, 1891; severe general and local reaction of all affected parts, Total number of injections 15; largest amount given 13 mg. Weight before injection 7 st. 8¼ lbs,; now 7 st. 11½ lbs. Duration of treatment 52 days,

Result.—Moderate improvement in skin, palate, and larynx.-P.

No. 36.—A. A, f., 36 years. Tubercular skin condition (lupus) of thigh stump after amputation for tubercular knee, inoculated from a sinus; duration about 2 years. Slight phthisis of right apex. When treatment was first commenced there was an oval patch, 4½ in. by 2 in., a good deal raised, warty, and in places suppurating slightly. The first injection of 1 mg., on February 19th, gave no reaction of any kind, and it was only when 6 mg. were reached, on February 24th, that a distinct local reaction was attained, with a temperature of 100·2. The total number of injections has been 15; the largest dose 8 cg. Duration of treatment 50 days.

Result.—Moderate improvement. The area of the disease is not lessened, but it is very much less raised, much of the tubercular tissue has necrosed, and there is some attempt at cicatrisation.—P.

No. 37.—M. P., f., 25 years. Lupus, hard palate, gums, nose, larynx and face; duration, about five years. Various local remedies used to palate without benefit When treatment was commenced there was an extending ulcer over the anterior part of the hard palate which involved the mucous membrane deeply, but did not perforate; the gums of the corresponding incisors and canines were reddened, warty, and in places ulcerated, the teeth were loose, there was a patch of lupus on the septum of the nose, the epiglottis was a good deal destroyed and there was thickening of the inter-arytenoid fold. There was a nodule on the right cheek, the size of a pea. The first injection of 1 mg., on January 22nd, gave rise to distinct local reaction and to a temperature of 100·2. The total number of injections has been 24, and the largest dose 1 dg. Weight, a week after first injection, 8 st. 2 lbs.; on leaving hospital, 8 st. 12 lbs. Duration of treatment as an in-patient, 39 days; as an out-patient, 39 days.

Result.—The palate is almost healed as are the gums and nose. The nodule on the face has disappeared. The laryngeal thickening is much less.—P.

No. 38.—W. L., m., 23 years. Lupus of face; five years' duration; eight times scraped and cauterised and once freely excised. When first injected the left cheek, the whole of the nose, and part of the right cheek were covered with a warty scabbed lupus, active everywhere and causing a terrible disfigurement. The first injection of 2 mg. on Jan. 16th gave marked local and general reaction The total number of injections has been 25, the largest dose 1 dg. Weight before injection 10 st. 4¾ lbs., now, 10 st. 11¼ lbs. Duration of treatment, as an in-patient 59 days, as an out-patient 25 days.

Result.—All the lupus appears to be quiet except small patches on the cheeks and one on the tip of the nose, but these are still improving. The rest of the diseased area is converted into soft red scar.—P.

No. 39.—F. F., m., 12 years. Lupus of face, ten years' duration; sixteen times scraped and cauterised. When first injected there was an active area on the right cheek, the nose, and upper lip. The first injection of 1 mg., on Dec. 27th, gave very slight local or general reaction, but after injection of 3 mg, on Dec. 29th, both were well marked. Total number of injections 26; largest dose 6 cg. As a small patch on the *upper lip* seemed at a stand still, this was scraped on Feb. 25th, and injections subsequently continued. Duration of treatment, as an in-patient, 86 days; as an out-patient, 16 days.

Result.—All the lupus seems to be cured, there are now no nodules, ulceration, or infiltration.—P.

No. 40.—H. M., m., 26 years. Tubercular disease of glands and skin, and formerly of metatarsus; several years' duration, during which time several operations were performed. When first injected there was some active mischief in gland of neck, in skin of this part, in both groins, on the right leg and foot. The first injection of 2 mg., on December 29th, gave distinct general and moderate local reaction. Total number of injections 28; largest dose given 8 cg. As some of the patches in the groins and on the leg seemed at a standstill, on February 14th these were scraped with a spoon.

Result.—There has been moderate improvement in all the affected areas; but, despite the scraping and injections, two small patches remain unhealed.—P.

No. 41.—W. S., m., 16 years. Lupus left cheek, following tubercular gland mischief; about three years' duration. First injection, of 5 mg., on Jan 10th, 1891, at which time the disease consisted of a nearly circular patch, about 3 inches in diameter, raised, nodular, and thickened. The first injection produced sharp general and local reaction. Total number of injections 24; largest amount administered 1 dg. Weight before injection, 6 st. 11 lbs.; present weight, 7 st. 5½ lbs. Duration of treatment, 90 days.

Result.—Marked improvement, but necrotic patches still follow each injection, although there is no constitutional disturbance of any kind.—P.

No. 42.—H. S., m., 29 years. Lupus of right cheek, of 24 years' duration; some years ago was treated with caustic. First injection of 3 mg., on January 5th, 1891, at which time the diseased area was 2¾ inches by 1¾ inches, nodular, indurated, but not ulcerated. The first injection gave distinct local reaction, but no general reaction was obtained until the second injection of 5 mg. Total number of injections, 30; largest amount administered, 15 cg. Duration of treatment, 95 days. Weight before injection, 9 st. 6 lbs.; after, 10 st. 4 lbs.

Result.—Greatly improved; the cicatrix at the margin is extending, but there are two small nodules which still react to injection, although there is *no* constitutional disturbance.—P.

No. 43.—J. B., m., age 13. Erythematous lupus of left side of face, chin, and neck; duration 7 or 8 years; no operation; suspicion of phthisis right apex. When injected the lupus had an active margin, and the whole area affected was curiously indurated, feeling like bacon rind. The first injection of ½ mg., on March 14th, gave a typical general and local reaction. The total number of injections has been 10; the largest amount administered 6 mg. Weight before injection 4 st. 9¾ lbs.; now, 4 st. 11 lbs.

Result.—Improvement, as shewn by paling and by marked lessening of the induration Duration of treatment 27 days.—P.

No. 44.—W. L., m., 11 years. Lupus of hand, about ten years' duration; it has been treated by erasion. First injection 2 mg., Dec. 29, 1890, at which time the diseased area was about 2½ inches long by 1 inch wide, partly scabbed and ulcerated, partly warty. This gave no general reaction, but there was slight local reaction and injection of 5 mg. on Jan. 2nd, gave sharp general reaction. Temperature 102·5, and mild local change. 12 injections altogether; highest amount 1½ cg. Weight before injection 5 st. 7¾ lbs.; after, 5 st. 11 lbs.

Result.—Cicatrization of about half of lupus patch, the rest smouldering on; the part remaining was scraped and excised on Feb. 6th right into subcutaneous tissue and the wound healed, but since, the part operated on has broken out again, the patch which healed under the injections remains sound.—P.

P. indicates that the case was watched by myself for symptoms of reaction.—G. B.

THE PRESCRIBING OF NARCOTICS.

PAPER READ AT QUEEN'S COLLEGE MEDICAL SOCIETY,

BY DAVID WALSH, L.R.C S. & P. ED.,
CLINICAL ASSISTANT AND PATHOLOGIST, BIRMINGHAM WORKHOUSE INFIRMARY.

NARCOTICS may be defined as drugs which affect consciousness by depressing the cerebrum or medulla. They appear to exercise in some way a selective action on those parts of the nervous system, and their chief danger is an undue depression of the centres of circulation and respiration There can be no doubt that nowadays the medicinal use of narcotics is very much on the wane. In the good old times the three great weapons of the practitioner of medicine were calomel, opium, and the bleeding lancet. Nor can it be questioned that opium and its allies, like mercury and phlebotomy, may be credited with the deaths of many of the victims to the then fashionable methods of treatment.

The best known medicinal narcotics are opium, chloral, belladonna, stramonium, hyoscyamus, alcohol, cannabis indica, and lupulus. They will be dealt with generally in the present paper, without any attempt to investigate their varying specific action on the nervous system. Of the drugs named the greater number will not require more than passing mention; belladonna, for instance, is little used for its hypnotic or narcotic properties, and stramonium is valued mainly as a sedative in lung diseases. Hyoscyamus is given to control the action of purgatives, and its alkaloid, hyoscyamine, is valuable hypodermically to subdue maniacal excitement, one-sixth of a grain injected under the skin causing complete muscular prostration within a quarter of an hour Lupulin, the active principle of lupulus, is occasionally prescribed as a hypnotic.

Alcohol presents us with a familiar example of the progressive stages of narcotic poisoning. In moderate doses its first effect on the nervous system is one of stimulation. It acts as a spur to the intellectual faculties; the imagination is fired, and the speech-centres thrown into unusual activity. An increased dose causes depression of all centres of brain and cord, so that the faculties become first dulled and afterwards arrested. Muscular action, after a period of incoördination, is finally paralysed. Unconsciousness, stertorous breathing, and great circulatory depression ensue. There is thus a definite series of effects, including stimulation, sensory and motor paralysis, hypnotic action, and coma. Further, a typical picture of chronic narcotic poisoning is seen in the habitual drunkard. Indeed, no better examples could be kept in the mind's eye of the results of acute and of chronic narcotic poisoning than those afforded by the abuse of alcohol.

The two remaining drugs are chloral and opium. Of these, chloral is used chiefly as a pure and powerful hypnotic, and it is only when dangerous doses are reached that it has a narcotic action. Opium, on the other hand, has several well-defined therapeutic effects. Thus, it is commonly given for the relief of pain, to produce sleep, or to paralyse muscular action. On account of its manifold properties opium was formerly looked upon as the "gift of God," and up to recent times it was prescribed for nearly every disease under the sun. Modern medicine, however, has changed all that, so much so that many of the younger school of practitioners seem to have almost entirely dispensed with its services. An excessive reaction, however, of this kind is rarely altogether wise, and there can be little doubt that opium and its alkaloids are still capable of rendering valuable assistance in the treatment of disease. It will be of interest to enquire briefly what are the causes of the comparative disuse of this ancient remedy. The main considerations may be discussed under three heads, namely—

1. The complex composition of opium.
2. Drugs of modern introduction used as substitutes.
3. Increased knowledge of the causation of disease and of pain as a symptom.

1. *Complex Composition.*—Opium has been split up into a number of constituents, and its potency shewn to depend chiefly on the amount of contained morphia. To use the latter alkaloid is obviously more scientific than to prescribe a variable preparation of the crude drug, such as the extract or tincture. Moreover, morphia is freed from the antagonistic action of the convulsants, thebaine and narcotine, which are contained in opium.

2. *Modern Substitutes.*—Opium, it may be at once admitted, stands without a rival in its general efficiency. Its specific therapeutic actions, nevertheless, are now to a great extent replaced by those of other remedies. Stimulation, for instance, is readily obtainable from alcohol or caffeine. Analgesia is sought for in substances that have a selective action, such as gelsemium; or in local anæsthetic applications, as carbolic acid or cocaine. For the relief of pain, opium has quite fallen into disuse in modern ophthalmic surgery, and has met with the same fate, though perhaps to a lesser extent, in obstetric practice. As regards its hypnotic action, opium is dangerous, because it is apt to depress the vital centres in the medulla,

death in cases of poisoning being due to paralysis of the respiratory centre. For the purpose of procuring sleep, opium is now almost entirely replaced by such drugs as the bromides and chloral, although the ideal hypnotic, *i.e.*, a drug that will produce sleep without undue depression of the nervous centres or other ill effects, has yet to be found. The paralysing action of opium is chiefly utilised in medicine to stay peristalsis of the intestines, a practice that will be referred to later on. It was formerly given in acute mania, but its use for that condition is now superseded, as already mentioned, by the hypodermic injection of hyoscyamine.

3. *Increased Knowledge of the Causation of Disease, and of pain as a symptom.*—In the first place it may be broadly stated that modern surgery, by preventing septic inflammations, has enormously lessened the amount of pain in wounds and surgical diseases. Formerly, the chief if not the only weapon of the physician confronted by abdominal pain was to ply his unfortunate patient with narcotics. The one great and classical remedy for peritonitis was opium; but under modern methods the surgeon opens the abdomen and looks for a cause of the inflammation. In a similar way he invades the different cavities of the body in search of obstruction, tumours, or other sources of irritation. In the section of abdominal surgery at the late meeting of the British Medical Association speaker after speaker denounced the use of opium. Early operation is nine-tenths of the battle in abdominal cases; and every operating surgeon can tell of patients lulled by narcotics into a sense of false security until their chances have been irretrievably lost. The chief point urged in favour of opium in the treatment of hernia, peritonitis, intestinal perforation, and other painful affections of the gut, is that it paralyses the intestines. Modern surgery, however, suggests with no uncertain voice that one and all of these conditions demand early exploratory incision, followed, where necessary, by operation. Undoubtedly opium is a powerful remedy for the relief of pain, and is of the utmost value in such cases as the passage of renal or biliary calculi, intractable

neuralgia, or the late stages of cancer. In this connection the general statement may be made that the use of narcotics in modern medicine is almost entirely palliative, and in rare cases only can be regarded as directly or indirectly curative. The old-fashioned lead and opium lotion is still extensively used by many surgeons in the treatment of various inflammatory disorders. Apart from the theoretical danger of bringing a poison like lead into contact with the body, it is extremely doubtful whether opium has any specific effect when applied to an unbroken skin, and the relief which undoubtedly follows its use in many cases is possibly due to such contributory causes as warmth and moisture.

Another important aspect of the question remains to be considered. The physician who prescribes narcotics is dogged by the ever-present danger that his patients may acquire a craving for the drugs thus ordered. Of the prostrate and broken-down condition of the victims of these morbid habits little need be said; one has only to turn for an example to a confirmed dram drinker, with every system of his body undermined and shattered. It is a common experience that a morphia or a chloral habit owes its origin to the orders of a medical attendant, who has therefore incurred a most serious responsibility. Alcohol, as the temperance reformers have so long insisted, must be included in the list. Tobacco, although no longer a medicinal narcotic, falls within the same category, and its use is undoubtedly harmful in many cases. Then, again, cannabis Indica or Indian hemp, which is extensively consumed in Eastern countries, should be mentioned as a narcotic drug, the taste for which is sometimes contracted under medical treatment. The widespread existence of these cravings, both for alcohol and for drugs, is a reality to which any practitioner of experience can testify. It is a well-known fact in the drug trade that an immense amount of opium is consumed in country places, while deaths from overdose are of constant occurrence in all classes of society. The restrictions placed on the sale of narcotic drugs and medicines by the chemists are practically inoperative. A short while since, the journals reported a case where a country carrier was in the habit of taking one or two shillingsworth of laudanum every week to an old lady whom the chemist had never even seen. As to patent medicines, everyone knows that the Government stamp allows the vendor to distribute any deadly poisons broadcast among the community.

Cocaine can perhaps hardly be classed with the narcotics, but it has forced itself into notoriety among the acquired drug-cravings. The present writer knows an instance where cocaine was ordered in the first place by a specialist, and where the patient grew so addicted to its use that he ultimately carried about a nasal spray and indulged in frequent applications, just as some people take snuff. It is only fair to add that the patient came of a neurotic family, and was at the time of acquiring the habit much harassed by business matters. Still, the occurrence of such complications should make the physician doubly cautious before placing so subtle and deadly a weapon in the hands of weak-minded patients. It is an unfortunate fact that a good deal of prescribing is done, not so much on the merits of each particular case as to satisfy the demands of patients and their friends. Under these circumstances a narcotic is a very convenient thing to prescribe, inasmuch as it does no immediate harm and often makes the patient feel a little better. As a general rule, however, a medical man will do well not to order narcotics except when absolutely necessary, and in that event to see that they are not continued a moment longer than required. In acute cases one is always tempted to relieve pain by any means immediately at hand. To narcotise the nerve centres, however, and to leave untouched the actual source of the trouble is an unscientific and illogical proceeding. An instance of the kind was brought under the writer's notice a short while since, where a medical man injected half a grain of morphia into the arm of a patient who was afflicted with a raging toothache. As a matter of fact, the patient happened to have an idiosyncrasy against opium, and nearly died in consequence of its administration, while the tooth had to come out later on. This case affords an exaggerated instance of what often occurs when drugs are resorted to in place of operation. The writer lately saw an abdomen opened for a "puerperal" peritonitis, and a ruptured pyo-salpinx was discovered and removed. That patient has made a good recovery, whereas not so many years ago the only course open to the physician would have been to dose the patient with narcotics in order to lessen sufferings that could have but one termination. In the old days, not to put too fine a point on the matter, the patient often died of peritonitis *plus* opium.

To sum up, it may be claimed that narcotics are being looked on with growing disfavour by medical men. This disuse may be traced (1) to a more extended knowledge of existing drugs, together with the discovery of new ones, and (2) to a better understanding of the causes and conditions of disease. Great caution is needed on the part of the physician lest his prescriptions lead to the formation of disastrous habits among his patients. Lastly, more stringent restrictions should be placed on the public sale of narcotic drugs and medicines.

PERISCOPE.

URINARY AND RENAL DISEASES.

BY ROBERT SAUNDBY, M.D., F.R.C.P.

Hæmaturia and Garden Rhubarb.—The following correspondence appeared in *The Lancet*, July 5th, 1890.

Sirs,—The letter of "Medicus" in *The Lancet* of last week reminds me that some years ago I wrote a letter to a medical journal on the subject of irritation of the kidneys from eating rhubarb tarts and drinking at the same time hard water. I was asked by an old practitioner, now no more—a fellow-student of the late Mr. Thomas Wakley, M.P., and a most enthusiastic admirer of his—to consult with him about some of his patients. He was having a little local epidemic of kidney complaints, of which complaint he himself was not quite free, and he could not discover the cause of it, unless it was owing to the great heat of the weather. The majority of the patients had frequent micturition, several of them had hæmaturia, and all of them complained more or less of pain in the loins and of general indisposition. After some consideration it was found that the medical gentleman and his patients were eating delicious rhubarb tarts; indeed several of his patients were indulging in them morning, noon, and night, and, in addition, they were drinking hard water rather copiously, as the weather was very hot. With these facts before us, the production of the epidemic was quite easy of explanation. The rhubarb supplied plenty of oxalic acid, and the hard water an abundance of lime; so countless minute calculi of oxalate of lime, easily seen in the urine with a magnifying glass, were manufactured in the system and caused the symptoms complained of. From that day to this I have been on the look-out for kidney complaints in the spring and summer, and I frequently find them and the cause of them. Gooseberries, when eaten freely, often produce symptoms similar to rhubarb, and so do acid unripe apples. In the production of these kidney affections lime seems to me to be an almost necessary ingredient.

I am, Sirs, yours truly,
Lincoln, June 30th, 1890. WILLIAM O'NEILL, M.D.

Sirs,—I am glad "Medicus" has sent his letter to you on the subject of garden rhubarb, for his having done so has at last induced me to record my own experience, which I have intended doing for years, but always delayed. I am affected exactly in the same way as "Medicus." For years I used to suffer from painful micturition after eating rhubarb. The irritability of the bladder, and dyspnœa generally, came on during the night after taking it at late dinner. The symptoms, however, were not so severe as to deter me altogether from taking it in small quantities. On one occasion, five years ago, I hurriedly, and without remembering, partook freely of rhubarb dumpling at luncheon. In the afternoon intense dysuria seized me, and was accompanied by profuse hæmaturia, which lasted for four days. Since then I have abstained from it. The condition of my bladder and kidneys is and has been absolutely healthy. They have never given me any trouble except after the use of rhubarb. I, too, like your correspondent, have been unable in any book to find this effect of rhubarb recorded. If "Medicus" likes to try the succulent stem again, he will find that he can do so almost with impunity if he uses it very early in the season when it is quite young. I suppose there are fewer oxalates in its early growth. I have met with two other persons similarly affected to "Medicus" and myself.

I am, Sirs, yours truly,
June 30th, 1890. M.D.

Sirs,—Your correspondent "Medicus," in your last issue, is quite correct in his estimate of the amount of oxalate of lime in garden rhubarb, as evidenced by the enclosed photo-micrograph; and should the stellate crystals, with their sharp points, pass through the delicate uriniferous tubuli in their unaltered condition, would doubtless lacerate them and produce hæmaturia; but after undergoing the action of the gastric fluid, it is questionable if they would be reconstituted in their normal form.

I am, Sirs, yours obediently,
T. CHARTERS WHITE.
Belgrave Road, S.W., July 1st, 1890.

Senator, H.—*Ueber renale Hæmophilie.* (*Berliner Klinische Wochenschrift*, 1891, No. 1.)—Prof. Senator has added another to the numerous causes of hæmaturia by recording the case of a young lady who suffered from long standing, frequently recurring, and profuse hæmaturia, proved by cystoscopic examination to come from the right ureter. There was no pain, and the patient's age discouraged the diagnosis of malignant disease. She belonged to a family of bleeders, and her father and mother were cousins. As a last resource the right kidney was extirpated.

The result was most favourable, as the hæmaturia two days after the operation disappeared never to return. The kidney appeared quite normal. Prof. Senator thinks that this case suggests that in some instances hæmophilia is due to a local defect in the walls of the vessels.

Cystinuria.—Dr. Walter G. Smith read a paper on Cystinuria at a meeting of the Medical Section of the Royal Academy of Medicine in Ireland on Dec. 19th. The condition is a rare one, and scarcely seventy cases are upon record. A boy, aged 8 years, was reported by his mother to have passed urine of a fragrant orris-root odour, and depositing a greenish sediment. The boy's health was excellent in all respects, and there were no symptoms of urinary irritation. Out of six occasions upon which the child's urine was examined, once only was cystin found. The crystals were identified by their form, solubility in ammonia, and insolubility in acetic acid. Dr. Smith discussed in some detail our present knowledge of the physiology and pathology of cystin. He maintained that—(1) Cystin, or a cystin-like body, occurs in small amount in human urine as a normal product of proteid metabolism; (2) no relationship exists between uric acid and cystin; (3) associated with cystinuria, pathologically, is the occurrence, in the urine and fæces, of certain ptomaines belonging to the class of diamines, viz., (*a*) penta-methylene-diamine (cadaverin) $C_5H_{14}N_2$, (*b*) tetra-methylene-diamine (putrescin) $C_4H_{12}N_2$; (4) normal urine and fæces never contain diamines, nor do they occur in cystin calculi; (5) the formation of diamines is due to the agency of specific bacteria in the intestine; (6) the exact nature of the correlation between cystinuria and diaminuria has not yet been determined; (7) cystinuria may persist for years without apparent injury to the health of the patient; (8) the therapeutical indication is to disinfect the contents of the bowel. Dr. Smith exhibited some microscopic slides shewing the characteristic crystals of cystin.

Observations on the proportions of the chief Proteids occurring in the Urine in various forms of Albuminuria.—Dr. Noel Paton, M.D., John Douglas, M.B., and Ronald Mackenzie, M.B. (*Brit. Med. Journal*, July 26, 1890).—The following are the conclusions arrived at by the authors of this interesting and instructive research :—

1. Senator was right in the conclusion that, in all cases of albuminuria, both of the chief proteids of the blood plasma are present.

2. The proportions of serum-albumin and serum-globulin may vary within wide limits, the quotient of the amount of serum-albumin divided by the amount of serum-globulin being sometimes as low as 0·6, sometimes as high even as 39.

3. In acute nephritis, when blood is absent the quotient is high When hæmoglobin is present, the globulin is, of course, in excess.

4. As the disease becomes more chronic the quotient sinks, and in the terminal stages of the disease may sink as low as 0·6: This alteration depends upon the condition of the patient rather than upon the state of the kidney, and is probably related to a similar change in the blood plasma.

5. Amyloid disease cannot be distinguished from the ordinary forms of chronic nephritis by the high proportion of serum-globulin as was formerly maintained by Senator.

6. Maguire's suggestion that functional albuminuria is characterised by the high proportion of serum-globulin is not correct.

7. In every case the proportion of the proteids to one another varies much in the course of the day, and in comparing the proportion of these proteids in different cases it is necessary to examine specimens of the mixed urine of the twenty-four hours, and to take into account the nature of the diet.

8. The proportion of serum-globulin is always highest during the night. It falls greatly after breakfast, when it reaches its lowest point in the twenty-four hours. In most cases it again rises in the evening. The precise connection of the alteration in this proportion with the taking of food cannot be considered as definitely settled.

9. Milk diet, as observed by Lecorché and Telamon, has a peculiar effect in increasing the proportion of serum-albumin.

10. The amount of proteids passed appears to bear a tolerably direct proportion to the amount of proteids taken, and, excluding milk diet, the increase of the proteids in the urine on a diet rich in these substances appears to be chiefly due to an increase in the serum-albumin.

11. The variations in the proportion of the albumin to the globulin in the urine is frequently so great that we can hardly believe that it is connected with a similar change in the plasma. The few experiments we have performed would suggest that a high pressure favours the transudation of serum-albumin, while a low pressure increases the proportion of globulin transuded.

Urochrome.—At the Hunterian Society *(Brit. Med. Jour.*, 1891, vol. i., p. 583) Dr. Thudichum read a paper on urochrome, its alleged derivation from the pigments of the blood and bile, and on the bearing of the alkaloids and extractive acids of the urine in gout, etc. A demonstration was given of the precipitation of the alkaloids of the urine by phosphomolybdic acid, and the separation of the pigment (urochrome) by ferric chloride. When urochrome was subjected to chemolysis several products were obtained, as a black substance, uromelanin; omicholine, which produces the intolerable smell of burnt urine; and uropittin, called by Proust urinary resin. Uropittin was recognised by a special band in the spectrum, something like that of hydro-bilirubin, but not the same. The prevailing opinion of the identity of uropittin and hydro-bilirubin was an error. It was stated in modern works on chemistry that the hydro-bilirubin was derived from hæmatin. He maintained this to be wholly mistaken. The urinary colouring matter was an alkaloid and a synthetic product of kidney action, not merely discharged by that organ. The alkaloids and organic acids in the urine normally balanced each other, but if the alkaloids were deficient, the synthesis of colouring matter was not equal to that of the uric acid; the latter regurgitated into the blood, and gout ensued. As to uræmia, urea was so diffusible a substance that it could easily be got rid of—sweated out of the skin, in cholera, for example, as he had proved. But with the colouring matter it was different; poisonous products were retained if the synthesis was insufficient. Uro-theobromin was another of these alkaloids, isomeric with the base contained in cacao. It was precipitated by copper oxide as a green precipitate, and if boiled again, with excess of copper oxide, it reduced it just like sugar. This probably accounted for some of the statements that healthy urine contained sugar.

Permanganate of Potash as a Urinary Test.—At the same meeting Mr. F. R. Humphreys read a paper on this subject. Instantaneous decoloration occurred in a solution of permanganate when urine was added rapidly to it. After testing the known organic and inorganic constituents normally present, he came to the conclusion that a phenol was the only one which could produce this effect. The phenol might be present in such a form as to admit of ready oxidisation. Baumann had proved that phenol, besides being made in the intestine, was also formed during the decomposition of albumen. The reducing body corresponded in its diurnal variations with urea and the uncombined sulphates; it was therefore certain that it was, like them, a product of the metabolis of the tissues. If the reducing body was a phenol compound it ought, when retained, to produce cerebral and nerve effects. It was remarkable that the forms, degrees, and symptoms of carbolic acid poisoning bore the very closest resemblance to those of uræmia, and that several of the most useful drugs in the latter condition were antidotes in the former. It was found that when the excretion of the reducing body was much diminished or increased, symptoms of uræmia were generally present. One cubic centimetre of a 5 per cent. solution of permanganate was diluted with 4 or 5 parts of water in a test tube, and the urine rapidly run in from a pipette marked in cubic centimetres. The normal amount of the reducing body excreted in the twenty-four hours was found to be from 17 to 34 grains, reckoned as permanganate, being highest in the first urine of the morning, in that passed four or five hours after a meal, and in fine warm weather. It was much increased in all febrile cases, except when marked cerebral symptoms were present; much diminished during a sick headache, but increasing rapidly as it passed off. The author claimed to have discovered the presence of a powerful reducing body in the urine, whose daily history shewed it to be a product of the metabolism of the tissues, whose reactions corresponded to a certain extent with those of a phenol, and whose suppression or excess corresponded closely with febrile cerebral symptoms and with those of uræmia.

Dr. W. Hunter said the views of Proust and Thudichum on urine pigments were foremost down to 1870; since then Jaffé had opened a new era. The colouring matter was no longer looked on as an independent body, but as a variety of pigments whose genetic relation to those of the bile and blood was established. Bilirubin was, without doubt, of the same nature as hæmatoidin; the relation was illustrated in old blood extravasations where blood was found in the centre; then an area of hæmatoidin crystals, and outside, the green colour of biliverdin. The modifications of urobilin found in urine (MacMunn) were almost precisely the same as those found in the bile. Urinary pigments were extremely unstable, and readily passed from one body to another when exposed to the air or to a few drops of acid. He viewed, then, with suspicion the results of such heroic methods as the use of phosphomolybdic acid, and relied more on the spectroscope and simple extraction with ether, etc. These methods led to the belief that all the pigment was derived from the blood, and was hence an index of changes in the body.

Dr. Lewis Jones had found a red body in febrile urine, giving a band at F., the junction of green and blue; this was urobilin, the uropittin, he supposed, of Dr. Thudichum. The colour of normal urine was due to a yellow body, which gave no characteristic spectrum, and was unknown.

On the Principles of the Treatment of Diabetes Mellitus.—F. N. Pavy, M.D., LL.D. F.R.S. (*Brit. Med. Journal*, Aug. 16, 1890).—Diabetes is due to the presence of an undue extent of sugar in the circulation, in consequence of a failure of power to arrest the passage of carbo-hydrates through the liver. • In the majority of cases in which the disease sets in after the middle period of life this condition may be controlled by treatment. Opium and its derivatives, codeine and morphine are the medicinal agents which assist in the actual cure of the disease, after by diet the excretion of sugar has been brought down to a certain point, and in favourable cases after a time a fair amount of the carbo-hydrate principles or even ordinary diet may be taken without leading to the elimination of sugar.

A simplified Test for Sugar.—Professor Nothnagel has communicated to a meeting of the Medical Association at Vienna a paper received from Dr. Becker of Cairo on a simplified test for sugar, which depends upon the fact that the paper used for the manufacture of visiting cards contains a large quantity of potash to make it heavier and fuller. When this paper is brushed over with a concentrated solution of sulphate of copper and then dried, the salt is crystallised on the surface. If the urine containing sugar is then added by means of a bit of wood and allowed to dry by the action of the air, or by holding it over an Argand burner (without browning the sulphate of copper), the latter is liquefied by the water contained in the small crystals, and the alkaline paper immediately produces the sugar-browning reaction. The more sugar the urine contains the darker the colour produced. The author considers the test highly sensitive. — *The Lancet.*

Diabetic Coma.—Dr. R. Schmitz, of Neuenahr, in Germany, has had a large experience in the treatment of diabetes, and therefore his opinion on diabetic coma is to be regarded with interest. He states that under the term "diabetic coma" two distinct conditions are to be recognised, both of them serious and somewhat similar at first glance, but entirely different as regards their pathology, and requiring different modes of treatment. The first is simple collapse, with coma; the second is an auto-infection, and is diabetic coma properly so called. By most observers it is ascribed to the condition of acetonuria. The collapse is the result of weakened heart power, brought about by an excess of sugar in the blood causing a general degeneration of the muscular tissue throughout the body, in which the heart participates. During collapse there is marked cyanosis, the respiration is quickened, the pulse is generally about 68 to 72 a minute, the temperature is not raised, the heart's beat is almost imperceptible, and the first sound can scarcely be heard. The treatment of this condition, according to circumstances, is prophylactic or active. If the cardiac degeneration is recognised before collapse occurs, the patient must be particularly warned against any violent exertion; cardiac depressants, such as the bromides or antipyrin, must be avoided; but, in addition to the ordinary diabetic treatment, a little alcohol should be added to the diet, and the patient should be out in the fresh air as much as possible. During the actual attack stimulants must be employed, of which the best are black coffee, castor oil, and hypodermic injections of camphor and musk. In true diabetic coma there are generally well-marked prodromal symptoms—complete loss of appetite, somnolence with unrefreshing sleep, etc. The tongue becomes coated and dry, the breath very fetid. When coma sets in there is fever (100° to 102° F.), respiration and pulse are quickened, the former rising to 45 and the latter to 130 a minute. There is much epigastric pain, but there is no tenderness. The diagnosis is easy, and is based on the epigastric pain and rise of temperature (both of which are absent in the first form), on the negative result from an examination of the heart, and on the rapidity of the onset of the coma. The treatment is directed to the removal of the toxic material, which Dr. Schmitz considers accumulates in the intestine. He consequently advises frequent doses of castor oil, even if diarrhœa be already present. He orders half an ounce every hour until a full evacuation is produced, and states that he has had excellent results from this method of treatment.

Albertoni, Prof.—*Sub-conteguse sull' Azione degli Succari nell' Organismo* (*Mem. della R. Acc. delle Scienze, Bologna*, ser. iv., tom. ix., p. 65).—The quantity of glucose which can be absorbed from the gastro-enteric canal under normal conditions is 60·65 gr.

per hour, according to experiments made upon a large dog. Absorption takes place as much from solutions more dense as in those less dense than the blood. During the first hour of administration the quantity of sugar absorbed is extraordinarily greater than in successive hours. The density of the fluid which remains in the stomach is always diminished and less than that of the blood, its quantity is not proportional to that of the sugar. The accumulation of sugar in the blood induces modifications of the circulating apparatus which follow also upon equivalent quantities of glucose, maltose, or saccharose, but last different times, ending when the excess of sugar is eliminated. In the dog, after intravenous injection of sugar, the frequency of the pulse augments 15 to 20 beats a minute; there is no increase if the vagi are cut. In man, administration of cane sugar by the mouth (100 gr.) increases the frequency of the pulse 6 to 8 beats per minute, and the effect is manifested in from fifteen minutes to an hour, according to whether it produces nausea or not, since in the latter case there is first a slowing. Blood pressure increases under the administration of glucose, maltose, or saccharose 15 to 20 per mm. of Hg. This does not depend on excitation of vaso-motor centres, nor on paralysis of the vagi, since pressure is equally increased if medulla and vagi are cut, wherefore it may be attributed to systolic activity of the heart. Sugar dilates the vessels, as is shewn by the augmented volume of the organs, as shewn in the kidney by Roy's method, and increases the quantity of blood which flows from a vein in the same time, the quantity being doubled. The velocity of the blood is much increased. Polyuria and glycosuria are equally intense when glucose or maltose is injected, and may be attributed to the dilatation of the renal veins, as Roy's oncometer shews, and to the action of the sugar on the urinary tubules. Morphia and chloral stop the manifestation of the effects of sugar on the circulation, but have very little effect on polyuria and glycosuria. These researches shew that sugar must not be considered only as a food, but as an agent capable of modifying the functional state as described. In order that the heart may carry on its rythmical movements, there are necessary in the normal condition not only apparatus, but also stimuli, irritating agents, which cause the apparatus to act. The sugar always present in the blood represents one of these irritants. The sugar which enters the blood at every meal exercises upon the circulation an irritant action as opposed to the depressing use of certain products of albuminoids, derivatives of peptones (peptina, Albertoni; peptossina, Brieger), which may be formed in the digestive process.—*London Medical Recorder.*

Troye, Dr.—*On Diabetes Mellitus (Archiv. für exper. Path. u. Pharm.*, 1890, Bd. 26).—This paper contains the results of investigations begun two years ago, in Prof. Naunyn's wards in Königsberg, to ascertain the effect of a successively increased supply of sugar upon the sugar-excretion in diabetes. The question for answer was whether increase of sugar in the food up to a certain amount would be followed by excretion of sugar beyond that amount. If this were the case, then it would follow that the excretion of sugar in itself was an evil, lessening more and more the capability of the organism to assimilate sugar. Precautions were taken as regards the diet, two of the four patients being placed under lock and key, and the others carefully supervised The sugar in the urine was estimated by the use of a Soleil-Ventzke polarising apparatus. Occasionally, Fehling's solution was used for the sake of comparison, but the difference in result was very slight, viz., 0·1 to 0·3 in favour of the latter. Elaborate tables are given concerning the food supplied and the urinary constituents, and the author draws the following conclusions:—The above question receives a negative answer in all four cases. There are apparent exceptions for a few days, but when averages extending over longer periods of time are taken, the result is as stated. But it was also found clearly that the assimilative power of the system in diabetes is really lowered by a persistent supply of dextrose, though not to the extent that had been supposed. This lowering, moreover, may be accompanied by a visible improvement in the bodily condition. In two of the cases there was an increase of the excreted sugar when the amount of animal food supplied reached a certain degree. In one case glycosuria followed an exclusive flesh diet, when the amount given was large. The author remarks, as regards an exclusive flesh diet, that except in a few cases with nervous symptoms, loss of weight, and increase of ferric chloride reaction, this diet is mostly endured quite well, and without any essential difficulties patients may be kept on it for months together.—*London Medical Recorder.*

Albuminuria in Children.—Dr. Seyournet, in the *Union Médicale du Nord-Est*, describes a form of albuminuria which he considers is more frequent than is generally supposed among children. It differs from the scarlatinal type usually observed. He studied the former type amongst children of the age of from eleven to sixteen months. A great many of the patients had been brought up on the bottle, having been fed on unsuitable food, causing distension of the abdomen or stomach, or occasionally enlargement of the liver or intestinal disorders, accompanied by vomiting or diarrhœa. He believes this special form of albuminuria to be of an infectious character, and traces it back pathogenetically to certain toxic substances which are generated by abnormal fermentation in the bowels. These substances are absorbed by the bowels and pass to some extent into the kidneys. They produce congestion in the renal tissue, which may lead to inflammation of the kidneys. One of Dr. Seyournet's little patients had scarlet fever twenty-two days after convalescence from this albuminuria. It is evident from this fact that it was not scarlatinal albuminuria. It was usually accompanied by anuria, whereby the congested condition of the kidneys was intensified. With some of the patients the daily evacuation of urine was only half an ounce. In one case the patient passed no urine for more than forty-eight hours. Notwithstanding this, no uræmic symptoms appeared. It was in most cases only the anuria which led to the urine being examined for albumen. The result of the examination in each case was positive. A strongly marked feature of this disease is the œdema of the feet, sometimes also of the hands and of the eyelids and face, but the latter were not always affected. The quantity of albumen varied from a drachm to ten drachms per diem. The duration of the disease was from two to four weeks. The treatment consisted in giving milk, which, in some cases, was mixed with lime water. Where there was vomiting, gentle aperients, such as castor oil or calomel, were given. Salicylate of bismuth was employed in order to disinfect the bowels as much as possible. Systematic massage of the lumbar regions was also employed in order to relieve the congestion of the kidneys.—*The Lancet.*

REPORTS OF SOCIETIES.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

PATHOLOGICAL AND CLINICAL SECTION.

Meeting held Friday, March 20th, Mr. **PRIESTLEY SMITH**, M.R.C.S., in the chair.

Mr. F. Marsh exhibited a man, æt. 31, with symptoms indicating secondary carcinomatous growth in the lungs, and occurring nearly two years after excision of the lower half of the rectum for adenoid carcinoma.

The case is of interest, in that it is the first recorded* in which the method of operative treatment of cancer of the rectum advocated by Mr. Marsh was carried out. The method consists in the performance of a preliminary iliac colotomy by complete division of the bowel, and closure of the opening into the lower segment, followed, after a short interval (seven to twenty-one days), according to the condition of the patient, by a proctectomy, and allowing the perineal wound to cicatrise up.

In this case the perineal wound had been absolutely closed for eighteen months, and during this time the man had continuously acted as a driver of a hansom. About November,

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* *British Medical Journal*, 1889, vol. i., p. 893; *ibid*, 1889, vol. ii., p. 803.

1890, twenty months after the proctectomy, he began to occasionally spit up a little jelly-like blood, and towards the end of December, when running, two or three mouthfuls came up. From that time until his admission into hospital, January 14th, 1891, he had one or two attacks of hæmoptysis daily. Stooping down was often sufficient to bring one on. He had no pain, very little cough, and no sickness. Since admission the amount and character of the sputum have varied considerably. The first week or two some ounces of dark red-stained sputum, occasionally almost pure blood, were daily expectorated; then for a few weeks there was hardly a trace of blood; and again there has been, for the last few weeks, a return of the hæmoptysis, the quantity and colour varying from day to day. No bacilli have been discovered. The temperature has generally been normal. The patient feels fairly well but rather weak, and the last few weeks has regained 3½ lbs. of 7 lbs. previous loss of weight. There is no sign of recurrence locally, nor in the adjacent lymphatic glands, nor in the liver. The only physical signs present are dulness and slight feebleness of breath sounds over the base of the right lung, reaching to one inch above the nipple line and apparently extending, for on admission the area of dulness did not reach above the level of the nipple line.

Dr. Foxwell, Physician to the Queen's Hospital, has kindly examined the chest on one or two occasions, and is also of opinion that although the physical signs are somewhat indefinite, yet, viewed with the history, they render the presence of a secondary malignant growth extremely probable.

The patient will be kept under observation, and the progress and result of these symptoms communicated to a future meeting of the section.

Dr. Foxwell exhibited a boy of 16 who had been sent to him at the Queen's Hospital as a case of goitre with pressure symptoms. On examination it was found that the apparent goitre was due to great hypertrophy of both sterno-mastoids resulting from the extreme difficulty of inspiration. This difficulty evidently arose from a post-manubrial tumour pressing on the bifurcation of the trachea. The boy had been in hospital three weeks and had for ten days been taking small doses of iodide of potash when he developed a sharp attack of pleuro-pneumonia at the right base. On recovering from this the tumour rapidly dwindled to less than half its largest size, the dyspnœa vanished, and at the present time the boy experiences no shortness of breath except when he attempts to run. The nature of the tumour is very uncertain; it is most probably a mass of enlarged glands; and if so, one would have expected the pneumonia to have increased its size rather than have diminished it.

Tubercular Cranial Necrosis.—Mr. Barling shewed a young man with tubercular periostitis of the frontal bone, causing necrosis and tubercular periostitis of ribs. The latter condition had existed for several years, but the head mischief for about eighteen months. There was a circular patch of necrosis the size of a shilling, involving both tables of the frontal bone and exposing the dura mater, which pulsated freely in the bottom of the opening, and from the margin of the opening small scales of bone occasionally separated. All round this the skin of the forehead was undermined over an area three inches in diameter, into which numerous sinuses opened. There was a suppurating gland over the right parotid region, and some others in the neck. The patient had sharp general and local reaction after injection of 1 mg. of tuberculine, and the lesion improved with further injections. Syphilitic treatment had not caused improvement; indeed the mischief had extended under its use. The patient had a scar on the penis, which might have been caused by a chancre, and of which he gave a very suspicious history.

Dr. Crooke shewed microscopical preparations of lupus, also sections of lung, from patients who had been treated by Koch's lymph.

Dr. Robinson shewed segmented rubber plates and raw hide plates for use in intestinal anastomosis.

Paper.—Dr. T. Stacey Wilson read a short paper on the so-called "post diastolic" murmur of mitral stenosis, in which he drew attention to the special points by which it is distinguishable from the presystolic (*i. e.*, auricular systolic) murmur. He also brought forward arguments in favour of the "diastolic" mitral murmur being due to a *vis a fronte*, as suggested by Dr. Lockhart Gibson (vide *Lancet*, April 19th, 1884) and not to a *vis a tergo* as is usually stated. He demonstrated the presence of this murmur in five patients, most of whom were in a satisfactory state as regards their general health and were following their usual employment.

In the case of one of these it was easy to demonstrate the interesting fact that an apparent reduplication of the second sound, audible *only* at the apex, was in reality a normal second sound, followed by a short somewhat musical diastolic mitral murmur, and that there was in all probability no real reduplication at all.

MIDLAND MEDICAL SOCIETY.

Wednesday, March 18th, 1891.

M. A. MESSITER, M.R.C.S., President, in the Chair.

Chorea with Arsenical Pigmentation.—Dr. Suckling shewed this patient. She had it six years ago. Has had pains in legs. Came on again three months ago. Flexure of elbows, axillæ, front of chest, back, around the eyes, areolæ of breasts, all pigmented. Abdomen much pigmented. No staining of mucous membranes or conjunctivæ. No cardiac murmur. Had pigmentation on the previous attack on taking arsenic. Is taking liq. arsenicalis ♏ iii., with iron. Mother has had rheumatism.

Healed Fæcal Fistula after operation for Perityphlitis.—Mr. Clarke.—L. L., aged 13, always had good health until three years ago, when she was confined to bed for a week with pain in right iliac region; remained well until a year ago when she had a similar attack lasting ten days; since that time has suffered from occasional pain in the right iliac region. No history of constipation.

Present attack.—On November 6th last complained of pain in right iliac region; was kept in bed and poultices were applied to the painful part for a week. She first came under the observation of Dr. Ellis and Mr. Clarke on the 14th of November, a week after the commencement of the attack. She then had considerable swelling in the right iliac and lumbar regions, which was very tender, and the skin over it was very red and hot. T. 103, P. 140, R. 36. Tongue coated; urine normal. Slight cough, but no physical signs detected in chest. Although no fluctuation could be detected it seemed certain that pus had formed, so it was decided to operate on the following morning.

Next morning, in the presence of Dr. Messiter, patient was chloroformed and the abdomen surgically cleansed. Corresponding to the swelling a hard firm mass was felt, but no fluctuation could be made out distinctly. Dr. Ellis then made an incision extending from a point one inch to the inner side of the right anterior superior spine of ilium, downwards and inwards for three inches, and the muscles were slit up, and then a distinctly fluctuating swelling could be felt. An incision was made into this, and about one ounce of non-odorous pus evacuated. The abscess cavity was then irrigated out with warm carbolised water, a large drainage tube inserted, and the rest of the wound sutured and dressed with Gamgee wool. On the next day patient was very prostrate and had expectorated some rusty sputum during the night, but no physical signs could be detected in the chest. T. 104, P. 140, R. 42. Wound healthy, irrigated with warm carbolic lotion.

Nov. 16th. The discharges from wound now had fæcal odour, so sutures were removed and wound ordered to be irrigated twice a day. Dressed with tow. There were now signs of double apex pneumonia, and the expectoration was almost pure blood.

Nov. 17th. Condition very critical. T. 104, P. 160, R. 64. Tongue dry and brown. Small pellet of hard fæces was found on dressing.

Nov. 19th. General condition now improved. Solid and liquid fæces now coming freely through wound. Bowels acted during night.

During the next five days fæces discharged constantly from wound; but the general condition of the patient continued to improve owing to subsidence of the pneumonia. T. fluctuated between 101 and 102.

During the next week fæces still continued to escape per wound, but were chiefly liquid in character, and the wound began to granulate. The patient continued to gain strength.

During the third week the escape of fæces from the wound became intermittent, and the bowels acted daily. Wound still irrigated twice daily.

By the end of the fourth week the escape of fæces had entirely ceased, and the discharge was perfectly inodorous. The wound was now rapidly granulating; no tenderness on pressure around the wound.

From this time the patient continued to do well, the wound healed completely, and at the present time there is not the slightest tenderness on pressure.

Unilateral Laryngectomy.—Mr. Chavasse shewed a boy, æt. 5, upon whom, two years ago, he had performed unilateral (right) laryngectomy for stenosis, resulting from diphtheria and repeated intubation, which rendered the patient completely dumb. The boy, who wore a modification of Gussenbauer's apparatus, could speak in a hoarse whisper, but with a phonal reed the voice was distinct and audible for some distance.

Entropion.—Entropion treated by transplantation of mucous membrane from the mouth. Mr. E. Wood White shewed this patient. He considered it far and away the most satisfactory way of dealing with these cases.

Specimens.—(1) Dermoid tumour of ovary. (2) Fibroid from a case of hysterectomy. Dr. Malins shewed interesting specimens of these conditions.

Porro's Operation.—Dr. Edgar Underhill read notes of a case of brow presentation in a contracted pelvis, where he had successfully performed Porro's operation.

Paper.—Mr. Taylor read a paper on uterine displacements.

REVIEWS.

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HYGIENE AND PUBLIC HEALTH.*

THIS is the last volume of the well-known "red" manuals issued by Messrs. Cassell, and in size and form exactly matches its predecessors. After a careful perusal of its 518 pages, one is struck by the immense amount of ground covered by the author. He treats of air, water, soil, etc., in the usual and orthodox way, and adds to this an immense quantity of information as to the duties of the medical officers of health, and gives also a sketch of existing sanitary legislation, including the several Acts passed in the last session of Parliament.

The book consists of an introduction, and seventeen chapters embracing the following subjects:—Air, Meteorology, Water, Food, Soil, Buildings, Removal of Refuse, Disposal of the Dead, Animal Parasites, Infection, Disinfection, Specific Diseases, Prevention of Infectious Diseases, Medical Officers of Health, Sanitary Law, Bye-laws and Regulations, and Vital Statistics.

The first four chapters call for no remark, except that the space given to these important subjects is only 134 small pages; and the author appears to be continually struggling to condense the information he gives within this meagre compass. As a result, much important matter is either left out altogether or given so shortly that it must be almost unintelligible to the beginner. The diseases produced by water, for example, are dealt with on one page; while the subject of meteorology, including charts and weather forecasts, occupies only eighteen pages. Food, again, including its varieties, diet and dietaries, diseases produced by food, cooking and adulterations of food, milk epidemics, etc., occupies only thirty-eight pages. When, however, we come to the more practical portions of the book, viz., removal of refuse, disinfection, and zymotic disease, we find a much fuller treatment, and indeed many features of great interest. Vaccination is shortly but well done, while the chapters on Medical Officers of Health, Sanitary Law, and Vital Statistics are amongst the best in the book; indeed we are inclined to award the palm to the last-named, this difficult subject being made as clear as possible in the space at the author's disposal. One thing that strikes the reader is the great accuracy observed throughout; and, indeed, the book is to be strongly commended for its many excellencies. It will be of the greatest use to the practical sanitarian, supplementing the fuller information contained in earlier manuals; but to the medical student, for whom it is supposed to be intended, it is, in our opinion, too concise and too advanced. If the author, in a future edition, could see his way to deal more fully with the elementary subjects, a great improvement would be effected, and the book would then take its place among the best of modern manuals.

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* Hygiene and Public Health. By B. Arthur Whitelegge, M.D., B.Sc. Lond., D.P.H. Camb. London: Cassell and Co.

DISEASES OF THE NOSE.*

THE practitioner of to-day would become profoundly learned in the diseases of the nose and the adjacent structures did he wade through but a fractional part of the abundant literature on the subject which is published for his special benefit. In spite of this, there was yet room for a good handbook; and we consider that this work supplies the want. It is handy in size, moderate in price, well illustrated, and is marked by the author's individuality. The opening chapter, on nasal respiration, will be found to be a scientific contribution to this interesting subject. Then follow, among others, chapters on acute and chronic rhinitis; on the pathology of chronic inflammation, as witnessed in the muco-periosteum of the nose; chronic rhinitis as affecting the ethmoid bone; mucous polypus; suppuration in the accessory cavities of the nose; nasal neurosis rhinitis sicca; post nasal growths; tumours of the naso-pharynx. Under the head of *Ozæna* we read that "the prognosis of ozæna is comparatively good, and, so far as treatment is efficiently conducted, is in *every case satisfactory*." (The italics are ours.) The only charitable inference that we can draw from this assertion is that the author's experience of this type of disease is a limited one, for we cannot believe that any careful observer who has had much practical experience of this obstinate and frequently incurable condition could come to a conclusion so diametrically opposed to what we have both seen and read of such cases.

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* A Treatise on Diseases of the Nose and its Accessory Cavities. By Greville MacDonald, M.D. London: Alex. P. Watt.

We certainly cannot endorse the writer's eulogistic reference to Mackenzie's snare. He says: "Of all instruments Mackenzie's snare is the most essential for nasal surgery." We have given it an extended trial, but discarded it long ago as a rather poor tool. It is not to be compared with a modification of Wilde's or a Krause for ordinary use; and we think the practitioner's experience would soon corroborate this. Although we are not at one with the author in all his views, this does not detract from the merit of the book, which we can heartily recommend as one of the best monographs on the subject, and will be found, moreover, a reliable and trustworthy guide to the treatment of these diseases.

ANTISEPTICS IN OBSTETRIC NURSING.*

In this book, of 120 pages, Dr. Shaw lays down rules for the nursing of obstetric and gynæcological cases, and gives the reasons for them.

In the first and second chapters the different forms of puerperal fever, and the way in which the infection may be carried, are discussed; and deductions are drawn as to the means to be adopted to prevent such a catastrophe occurring.

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* Antiseptics in Obstetric Nursing. By John Shaw, M.D. Lond. London: H. K. Lewis. 1890.

In Chapter III. the various forms of germs are described, and certain flask experiments illustrating the cultivation of various germs from different putrefactive matters are given. We should be inclined to regard the latter as somewhat out of place in a book of this kind. This chapter ends with a brief outline of the anatomy of the female organs of generation, pointing out the way in which septic infection is favoured.

The fourth chapter is devoted to a description of most of the antiseptics in common use. Three pages are occupied with directions for the spray.

In the fifth chapter are some very useful and practical directions as to antiseptic precautions and cleanliness to be observed in both midwifery and operation cases.

In the sixth chapter are directions for the preparation and nursing of patients in cases of gynæcological operations. These are clear and to the point; but to one or two we would take exception. Thus, in preparation of a case for abdominal section the nurse is directed to shave the pubes. In our experience we have never seen this done, nor do we think it necessary, as the loose hairs after shaving are difficult to thoroughly remove. We also think it is carrying antiseptics too far to insist on the packing of the vagina with antiseptic pads previous to an abdominal section.

In the seventh and last chapter the application of antiseptic principles to childbirth is considered; and the author very properly says that we should take just as much care in an ordinary case of maternity as in a Cæsarian section, and strongly insists on the necessity for absolute cleanliness. We are glad to see that he does not advocate the vaginal douche in every case, as we think that by the injudicious use of this, much harm may be done.

There is an appendix containing a copy of the rules for infant feeding in use at the North-west London Hospital, with which institution the author is connected.

THE MEDICAL ANNUAL AND PRACTITIONER'S INDEX.*

THE Medical Annual, which has now reached the ninth year of its existence, is undoubtedly by far the cheapest and, considering its price, the best of the various year-books now published in various parts of the world. It contains an alphabetically arranged account of new treatment, compiled by a group of well-known specialists, among whom we note the names of Ullingham, Lennox Browne, De Havilland Hall, Allan Jamieson, Mayo Robson, Saundby, Shingleton Smith, J. W. Taylor, and the late Hugh Owen Thomas. Where necessary, illustrations have been liberally used. Besides, there are several original articles by eminent writers like Professor Dujardin-Beaumetz, of Paris. and Dr. Long Fox of Bristol. Nor do we count among the least useful part of this book the admirably classified and indexed advertisements, which contain a vast amount of information of the greatest value to a practitioner. Thus he can find homes for invalids or inebriates, lunatic asylums, hydropathic establishments; he finds lists of all the dietetic articles in use in the sick room, and their makers; new drugs and surgical appliances, as well as a list of new books, and miscellaneous articles.

ÉTUDES SUR LA RAGE ET LA MÉTHODE PASTEUR.†

THIS new edition of Dr. Lutaud's attack upon Pasteur's treatment of rabies in man does not add very much to our knowledge of the subject. In an enquiry of this sort, as scientific men, we desire only to discover what is true; and it is much to be regretted that this discussion has been carried on, on both sides, by means which do not appeal simply to the critical faculties. In our opinion the success of M. Pasteur's treatment still remains very doubtful. The great stumbling-block in the way of accepting the belief in the reality of the cures alleged is that the annual mortality from rabies has not diminished in France. According to the statistics of Tardieu and Brouardel, it is impossible to accept a higher figure than 40 for the average annual mortality in France from rabies before the Pasteurian method was put into practice. During the four years which have since elapsed 154 deaths have occurred, or an average of 38 *per annum*—practically the same figure. If Pasteur and his friends are to be allowed the credit of the cures they claim, the annual mortality in France previous to 1886 must have been at least 250; but there is no ground whatever for assuming that this could have been the case.

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* The Medical Annual and Practitioner's Index: a Work of Reference for Medical Practitioners. 1891. Ninth year. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent and Co., Lim.

† Études sur la Rage et la Méthode Pasteur. Par le Docteur Lutaud. Second edition. Paris. 1891.

DISEASES OF THE NOSE AND ITS ACCESSORY CAVITIES.*

THE time which has elapsed since the appearance of the first edition has produced such considerable advances in the diagnosis and treatment of the nasal passages that Mr. Spencer Watson's book has undergone much-needed revision and enlargement. The result is, on the whole, very satisfactory, and the book may be recommended as a reliable source of information on the subjects of which it treats. Amongst the best chapters are those on the methods of examining the nasal cavities, on the diseases of the various sinuses and of the antrum of Highmore, and of those conditions which may be summed up under the heading of neuroses. Brief contributions are made by Mr. W. Adams on fractures and dislocations, by Mr. Cumberbatch on diseases of the ear in connection with nasal diseases, and by Dr. Robert Liveing on lupus erythematosus. A good deal of what is written on lupus might have been omitted without loss, as the pathology is not up to date, and the general description of the disease is to be found in the ordinary medical text-books. It should be mentioned that over eighty woodcuts and other illustrations are inserted, and that most of them are very good.

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* Diseases of the Nose and its Accessory Cavities. By W. Spencer Watson, F.R.C.S. Second edition. London: H. K. Lewis.

DISEASES OF THE NOSE.*

THIS book has been compiled by the author more especially for the senior student, and well the work has been done. It forms a concise and well-arranged volume, not too much or too little; for in the space of 200 pages we have an excellent epitome of the etiology, pathology, and treatment of these diseases. The author has avoided all "controversial points;" so the student will therefore find this handbook a good introduction to the larger treatises should he desire to extend his knowledge on this subject. The various methods of treatment adopted are clearly laid out in a separate chapter; and the addition of a number of well-selected formulæ at the end of the volume will be found of service for reference. The work may be perused with profit by both student and practitioner; and they may go further and fare worse in providing themselves with a useful handbook on diseases of the nose and naso-pharynx.

NEW INVENTIONS, DRUGS, ETC.

CAFFYN'S LIQUOR CARNIS.--We have received a sample of an improved preparation of liq. carnis flavoured with celery, by which the proprietors hope they have materially improved its taste; and we have no hesitation in saying that, in future at all events, no fault should be found with it on this score.

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* A Handbook of Diseases of the Nose and Naso-pharynx. By James B. Ball, M.D. London: H. K. Lewis.

Cleaver's Juvenia Cream and Toilet Soap.—We have received specimens of Messrs. F. S. Cleaver's Juvenia Cream and Toilet Soap. Juvenia cream is probably a lanoline ointment containing a little oxide of zinc, and suitably scented. It is a very elegant preparation, and will no doubt be very useful and acceptable in cases of roughness, redness, or chapping of the skin. Juvenia Toilet Soap is a superfatted soap from which the greater part of the water contained in ordinary soap has been got rid of by submitting it to enormous pressure. It is pure soap, to which is added 5 per cent. of juvenia cream. This soap is innocent of any colouring matter, being pure white, and its perfume is most fragrant and delicate. We may mention that the prices at which these articles are offered are very moderate indeed.

Miscellany.

She Couldn't Remember.—Women are our worst cases, said old Doctor Bismuth, impatiently, one day. It takes them an hour and a half to tell how their babies got buttons up their noses, or how they themselves feel when they think they are sick. And when it comes to asking questions there is no heading them off at all. I explain in the simplest manner every detail in regard to their taking the medicines I give, and after I've got them out, and the door locked and bolted, they'll come rushing back to go through with this catechism:—"Oh. doctor, which did you say to take first—the drops or the powders?" "The drops." "And then the powders?" "Yes." "And then the drops again?" "Yes." "How often did you say?" "Every two hours—it is marked on the medicine you will find." "Is it? Oh dear me! How many drops did you say?" "Six." "In how much water?" "A teaspoonful." "And then one of the powders?" "Yes." "Are the powders bitter?" "No." "Shall I take them dry?" "If you like." "Shall I take them at night?" "It is not necessary." "What if they don't cure me?" "Come again." "It isn't anything serious?" "No." "Because I'd want to know the exact truth if it was. There's heart disease in our family. My mother's uncle died of it, and my own cousin fancies he has it now, so of course I'm a little worried; and if I thought there was really any danger I'd—I declare I've forgotten which I'm to take first, the drops or the powders. Which did you say, Doctor Bismuth?" "The drops." "And then the powders? Oh, yes I remember. How stupid of me to forget—sixteen drops in ——" "No, six drops." "Oh, yes, six drops in half a teacup of water, and ——" "No—in a teaspoonful of water." "Oh, yes; I must be crazy. I never could remember anything. It's so provoking. Now let me see—after the drops come the powders, two every hour until—" "No, one every two hours." "Oh, of course. How foolish of me! I shall remember now—first a drop. then a powder. That's it. Oh, doctor, I wanted to ask you if——" Another patient comes in and I am rescued; but ten to one I shall be rung out of bed at midnight and hear a feminine voice screeching up the tube:—"Doctor Bismuth, that you? What did you say to take first—the drops or the powders? I fear I have made a mistake."—*Wednesday Journal.*

GERMAN MEDICAL DIPLOMAS.—In the numerous small free faculties of Germany the medical students pass their examinations in the following manner:—"Do you smoke?" asks the examiner. "Yes, sir," answers the student. "Will you have a cigar?" (Hands the professor a pfennig cabbage-leaf cigar.) "Tell me," says the professor, slowly lighting his weed. "what are a physician's principal duties?" "To collect his fees, increase his practice, and exhibit his diploma from the time-honoured University of Guzzleburg," replies the student. "Where shall you practice?" demands the professor, "and what are your duties toward me?" "I shall go to America among the ignorant natives and make a golden harvest, and my duty toward you, Herr Professor, is to invite you to dinner for the rest of the semester," answers the student. The professor smiles and says, "You are right. Let us go to a restaurant opposite and I will sign your diploma. The diplomas of the time-honoured 'University of Guzzleburg' are admired and respected in America. I have a cousin who is a doctor in Chicago. Let me tell you how the Indians chased him on Prairie Avenue. He was wounded twice by their arrows and captured, but was released by his pursuers when they found on his person the time-honoured diploma of the 'University of Guzzleburg.' Ah! here's the restaurant, and I will make out your diploma from the time-honoured 'University of Guzzleburg.'"—*Lancet-Clinic.*

New Books, etc., Received.

The New Sydenham Society's Lexicon. by HENRY POWER, M.B., and LEONARD W. SEDGWICK, M.D. Seventeenth part.

The Thermometer in Obstetrics and Gynæcology. By A. D. LEITH NAPIER, M.D. London: H. K. Lewis. 1890.

Notes on the Examination of the Sputum, Vomit, Fæces, and Urine. By SIDNEY COUPLAND, M.D., F.R.C.P. London: H. K. Lewis. 1891.

On the Use of the Oil of Eucalyptus. By J. BRENDON CURGENVEN. London: H. K. Lewis. 1891

Elements of Practical Medicine. By ALFRED H. CARTER, M.D. Lond. Sixth Edition. London: H. K. Lewis. 1891.

A Manual of Diseases of the Nose and Throat. By PROCTER S. HUTCHINSON, M.R.C.S. London: H. K. Lewis. 1891.

The Comparative Climatology of London and the Chief English Health Resorts. By BERTRAM THORNTON, M.R.C.S. London: H. K. Lewis. 1891.

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THE
BIRMINGHAM MEDICAL REVIEW.
JUNE, 1891.

ORIGINAL COMMUNICATIONS.

MODIFICATIONS IN THE TREATMENT OF TALIPES.

BY WILLIAM THOMAS, F.R.C.S.,
SURGEON TO THE CHILDREN'S AND ORTHOPÆDIC HOSPITALS.

In selecting the treatment of talipes for the subject of my paper this evening, I am well aware that I cannot expect to interest a large number of enthusiastic listeners. The subject is not a very attractive one to surgeons generally, who often have been disappointed of highly promising results, although patient and persevering efforts have been carefully carried out to secure them. If we could always trace our cases, we should find that experiences such as the following are not uncommon. Many years ago I operated on a rather severe case of talipes equino-varus in an infant, with apparent success; the result, after about three months' treatment, being highly satisfactory both to the friends and myself. I lost sight of the case; but about seven years after, I chanced to see the mother, who told me, on enquiry, that a few weeks after I had last seen the child, the foot began to turn in again; that they had been induced to place it under the care of an eminent specialist; that it was still under treatment, and was improving. Indeed some cases may fairly be termed inveterate, from their obstinate recurrence after the most careful and systematic treatment. Amongst the number I exhibit this evening is one such case. The child is now five years old, and has been under my care since the age of two or three months. He has been treated by manipulation and fixation in plaster, tenotomy and syndesmotomy have been performed, he has worn Scarpa's shoes and other restraining apparatus; but the tendency to recur seems as marked as ever, and when the mechanical appliances are left off for a week or two, the foot seems almost as bad as ever.

So strongly was I influenced by the tediousness and apparent hopelessness of the ordinary treatment, that I am convinced that if I had the misfortune to have a child born with severe double talipes, I would rather have removed both feet by Syme's operation than have had the trouble and worry of years of perhaps fruitless labour. Further experience has convinced me, however, that nearly all cases are curable if efficient treatment is commenced soon enough and patiently carried on for long enough.

I ought perhaps to define what I mean by "cured." It is not often that one sees a well-cured case of talipes; certainly they are not often exhibited at our societies; and what I have seen are for the most part such as have been under my care. I look on a case as cured when the patient himself can evert the foot to a fairly normal extent; can walk on the sole; and in whom all the movements of the foot can be passively performed without demonstrating any tense resisting structure. A little inversion may still remain, and the tendency to relapse require restraining appliances for a considerable time. The difficulties of treatment can be well understood if we consider the alterations of the various structures in an ordinary club foot—the changed articular surfaces, the contracted ligaments, the atrophied muscles, and the defective innervation. It is not my intention however to treat of the pathology, but rather to draw attention to some of the modifications in the treatment which have taken place since I began my surgical career.

My observations will be at most entirely confined to the treatment of talipes equino-varus, which is of most frequent occurrence, and in which, from the compound nature of the distortion, the treatment is more complicated and difficult. As a student I was taught that the proper way to treat talipes equino-varus was to divide the tendons, allow the foot to remain in the abnormal position for two or three days until the punctures were healed, and afterwards gradually stretch the newly-formed uniting medium by suitable mechanical appliances. Immediate instead of gradual extension is now the rule; and even this little modification has materially increased the general success of treatment. Indeed, when we consider how quickly tendons unite and contract after division, it is surprising that immediate extension was not adopted sooner.

Forcible manipulation is a useful mode of commencing the treatment of a case of talipes. The patient is anæsthetised, and the foot forcibly moved until the articulations and tendons become so relaxed that it can be brought into a more or less normal position. It is then fixed by a splint or plaster case. The treatment requires frequent repetition. The manipulation and fixing ought to be repeated for some time at least once a week, or relapse will take place. The greatest use of forcible manipulation is the knowledge gained of the contracted tissues which keep up the deformity. By its means the tendons, ligaments, or fasciæ which require division can be more accurately defined, and cases requiring tarsectomy can be separated.

Syndesmotomy, or the division of ligaments, has recently been strongly advocated, especially by Mr. R. W. Parker, who, in his very able monograph on "Congenital Club Foot," gives a large share in the production of the deformity to shortened ligaments. As an adjunct to tenotomy, syndesmotomy is very useful; but even greater care in immediate and continued extension is required, as relapse seems more frequent and more marked in cases which seem to require this operation than any. On the whole, I must confess myself disappointed with the general results of syndesmotomy.

I have next to consider by far the most important modification in the treatment of talipes which has been introduced since subcutaneous tenotomy—I mean section of the tarsus. The names of many English surgeons are associated with it, especially prominent among whom are Davy, Davies Colley, Bryant, and Lund. Special orthopædic surgeons have not been much in favour of it; but I venture to think that the advantage gained in time, and the fact that no expensive instruments are required, will ultimately tell strongly in favour of this method of treatment when the operation is fully perfected.

The operations are known as tarsotomy or tarsectomy. Of the former, which signifies simple section of the tarsus, I have had no experience, not having yet seen a case in which it might have been expedient, nor do I know of any published case. Tarsectomy consists either in the removal of individual bones, as the cuboid or astragalus, or the excision of a wedge out of the tarsus, so as to bring the foot into a normal shape. Removal of the cuboid I have only done twice, and do not think I shall ever attempt it again. It might be a suitable operation for some special case of deformity, but in my cases after its removal the foot was not readily brought into a good position, and in both I had to remove other portions of the tarsus before this could be accomplished. I am also loath to take away the groove for the peroneus longus tendon which is so important an aid in keeping the foot out.

Removal of the astragalus has some advantages over that of the cuboid, but it does little to correct the varus and interferes with the ankle-joint. The latter does not seem very important when we remember the brilliant results obtained by the late Mr. Houghton, of Dudley, in some injuries of the foot by removal of the astragalus, from which it would appear that its absence is attended by little inconvenience so far as the movements of the ankle-joint are concerned; but from what I have seen of it as applied to the cure of talipes it seems to act rather by the general relief of tension than by correcting the deformity, and like the former operation requires to be supplemented by the removal of other portions of the tarsus.

Cuneiform tarsectomy, or the removal of a wedge of bone from the tarsus to correct the deformity produced by club foot, is a very efficient and speedy mode of treatment, and although apparently a severe operation, when properly performed gives no more trouble than an ordinary tenotomy. I have performed this operation so many times that I have established for myself a definite mode of procedure which I hope I may not be considered tedious if I describe in detail.

The operation is essentially the same as Mr. Davy performed and described several years ago, the slight differences will be readily recognised. The foot and leg are surgically cleansed, and rendered bloodless by Esmarch's bandage. The foot is placed with its inner concave border downwards on a sand pillow, and the operation commenced by the removal of a piece of skin from the dorsum and the outer side of the foot corresponding with the base of the wedge to be excised. This strip of skin is bounded by two curved lines, the extremities of which unite internally over the astragalo-scaphoid joint and externally over the calcaneo-cuboid. The amount of divergence of the two lines depends on the degree of deformity, but it is well to make it include the thick skin and bursa usually present. I look upon the removal of this piece of skin as an important part of the operation which materially facilitates the subsequent step, for after its removal all the tendons and other structures can be readily seen, the former usually well on the inner side of the foot out of the way of the operator, and the outlines of the tarsal bones can be easily traced.

The next step is the removal of the wedge of tarsus, which should be a double wedge with two bases and two apices, viz., a base at the outer margin with an apex internally, and a base on the dorsum with the apex below. Not much care is taken to avoid removing the soft parts in connection with the bones; the tendons are interfered with as little as possible; but the ligaments and periosteal structures are freely removed, the object being to take a clean wedge large enough to correct the deformity when the surfaces left by its removal are brought into accurate apposition.

In children an ordinary scalpel is the only cutting instrument required, as the tarsal bones are largely cartilaginous and the cancellous tissue can be cut with a knife. For adults the thin palette knife osteotome is sometimes necessary, steady pressure with the hand, occasionally assisted by a gentle tap with the mallet, being all the force required. It is difficult to give any rule to regulate the size of the bases of the wedge. The greater the extent of the deformity, the wider must the bases be; and in a severe case it is not easy to take too much away. If the foot is not straight when the cut surfaces are placed in apposition, more bone must be removed or the surfaces trimmed until they are easily brought together with the foot in a correct form. The Esmarch's bandage is now removed, and all bleeding points sought for and tied. The cut surfaces of the bones are next dusted with boric acid, applied to one another, and the fibrous structures about the bones carefully stitched together with gut sutures. Finally, the skin margins are stitched and the operation is completed, leaving the foot in a normal position with a simple linear wound over the dorsum. No drainage tube is employed, but the wound is covered with a piece of lint soaked in boroglycerine. The foot is now covered with Gamgee tissue, over which a plaster bandage is applied and the limb fixed on a back splint with rectangular foot-piece. It is rarely necessary to disturb the dressing for three or four weeks, when the wound will be found healed and the foot plantigrade. A plaster case may be applied for a few weeks after, as a precaution against accidents.

I have performed this operation fifteen times, and have always been satisfied with the result. In the earlier cases suppuration frequently occurred, but improvement in the performance of the operation seems quite to have abolished it. The worst results are those in which sufficient bone has not been removed, and a little inversion of the foot remained which could easily be corrected by a further operation.

As an adjunct to this operation, shortening of the tendons of the peronei muscles is a useful measure. A hook is placed under the tendon and a loop of it drawn out, a strong catgut ligature is passed through the tendon above and below the loop, the loop is then cut away by two oblique incisions through the tendon, the cut ends are drawn together by the ligature, which is tied, and if necessary additional sutures are passed through the tendon to keep the applied surfaces in more accurate apposition Care must be taken that the first suture securely holds the tendon before section, or the proximal end may slip far up in the sheath. I think that shortening of tendons is a useful measure both in tarsectomy and in less severe cases where a wedge of bone is not removed; but further experience is necessary before its utility can be established.

Many objections are urged against the operation of tarsectomy, but most surgeons are agreed that it is the proper treatment for severe cases in adults. I think there is great gain in time, trouble, and expense in many severe cases if the operation is performed during childhood. Two objections I would especially refer to—first, the alleged danger of the operation, and second, the shortening of the foot which naturally results.

With regard to the first, modern surgery has done so much to remove danger in operations that I am convinced, when tarsectomy is properly performed, there should be no more risk than from an ordinary tenotomy. The shortening of the foot is of some importance where only one is affected, especially as the deformed foot is usually smaller than the normal one; but in cases of double talipes, beyond the fact that the patient appears to have rather short broad feet after the operation, the defect is not very noticeable.

In cases treated successfully without tarsectomy there usually remains an excess of skin on the dorsum and outer side of the foot which is thrown into folds when the foot is everted. I have lately adopted the practice of removing this redundant skin, with considerable improvement in the shape of the foot, correction of the inversion, and advantage in walking. This is usually best accomplished by two semilunar incisions connected at their extremities, as already described in the operation of tarsectomy.

I had intended including in my paper an account of my experience of elastic bands as artificial muscles, but the few subjects I have briefly and imperfectly alluded to will furnish enough topics for discussion; and thanking you for the patient hearing you have given me, I submit the various points to your judgment.

POST-GRADUATE LECTURE ON TUBERCULOSIS OF THE SKIN.

BY GILBERT BARLING, B.S., F.R.C.S.

TUBERCULOSIS of the skin appears to exist in two distinct forms: an acute and rather rapidly spreading lesion, the nature of which does not seem to be doubted by anyone, which must be classed as a distinctly virulent form of tuberculosis, and a more chronic form, which produces but slow destruction of tissue, is less threatening to life, and is recognised clinically as lupus.

Whilst we can recognise these two well-defined types of skin tuberculosis, we not uncommonly meet with cases in which the characters of the two are blended; this is especially so in cases where a deep tubercular lesion, as of bone, has spread to the surface and infected the skin, the resulting infiltration and ulceration resembling sometimes the acute, but generally the chronic form alluded to above.

I will deal first with the acute tuberculous, or as it is sometimes called the true tuberculous ulcer. This condition appears generally to follow on accidental inoculation, either directly as in making an autopsy on a tuberculous subject, or in the rite of circumcision, or else indirectly from washing the linen, etc. of a tuberculous patient. In either case, the primary lesion, if on the finger, may be a nodule in the deepest part of the skin, or in the subcutaneous tissue, which is noticed usually about a fortnight from the time of inoculation, or sometimes it is described as an indolent whitlow, which does not at first suppurate. In cases of infection during circumcision the wound does not heal, its edges become thickened and the tissue around infiltrated in about ten days after the operation. Eventually, on the fingers, as on the prepuce, a slowly extending ulcer forms with livid edges, which are undermined, and with a coarsely granulating base, the surface of which is covered in places with a greyish yellow adherent lymph. The ulceration may spread in a sinuous or serpiginous manner, and at the margin of it, brownish red nodules like lupus appear in the skin, which eventually break down, producing small punched out ulcers, and these become later merged in the chief sore, which by extension may cover an area of three or four inches long with a width of an inch or more. A section carried through the base of the ulcer and its edges shews in the subcutaneous tissue and the deep layers of the skin, well-marked tubercular structure with giant cells and tubercle bacilli, the last being found with some frequency, much more so than in lupus. There is considerable tendency for a tubercular lesion to extend, and especially so by the lymphatics along which, for instance in the forearm, nodules may be felt which tend to ulceration. The nearest lymphatic glands are then involved, in the case of the finger, the supra-trochlear gland, and subsequently the axillary. The time which elapses before glandular infection takes place is variable, depending probably upon the amount of virus introduced by the inoculation, and the depth at which it is lodged in the tissues; the glands after inoculation by circumcision have been found distinctly enlarged three weeks after the rite, and at a later date, they are apt to suppurate. Further extension appears to be delayed for a time by the blocking in the glands, and if these, the ulcer, and any other local lesion be excised, the patient probably escapes further trouble. It may happen on the finger that the first extension takes place by the sheath of the tendon, the glands suffering afterwards, but whichever is first involved, if the diseased parts are not freely removed by excision and scraping, general infection occurs, and phthisis or some other tubercular lesion is set up in distant parts. Microscopic examination of the lymphatic trunks, glands, tendon sheath, or other secondarily affected tissue shews ordinary tubercular structure with bacilli.

Comparing the tubercular skin lesion I have thus briefly outlined with what we know of the local progress and slow extension to other parts of lupus we are struck by the differences between them. It is the stress laid upon these differences which has led to the doubt that lupus is really what I describe it to be, a tuberculosis of the skin It is in this connection most important to remember that similar differences may be found in tuberculosis of other parts and organs: take for instance the lung. Here we may have in one case a rapid spread of the disease throughout the lungs and the death of the patient in a few months; in another case the tubercular process spreads slowly, is accompanied by great fibrosis and cicatrisation, and the patient lives for years; and again, in a third instance, we find at the apex of the lung a few calcified tubercles of which nothing was known during life and which are only discovered accidentally after death in a perfectly quiescent condition. The lupus of which I am now speaking includes those conditions referred to clinically as lupus exedens, lupus non-exedens, hypertrophic lupus, and acne lupus, and I purposely exclude lupus erythematosus because I have not had personal opportunity of investigating microscopically a typical case; and of course I also exclude what is even yet called syphilitic lupus, which has nothing in common with the disease we are discussing.

In lupus we have a disease characterised by the presence of brown or brownish red nodules in the skin; these tend to spread slowly and in a serpiginous manner from their original site, and are surrounded by an infiltration whilst the surface is often scaly. The nodules may give rise to ulceration which may become very extensive, or on the contrary, cicatrisation may occur without actual ulceration; whilst in other instances there may be much enlargement and hypertrophy of the papillæ; and again in others hypertrophy and inflammation of the sebaceous glands; these purely accidental conditions giving rise to the classification of lupus into several varieties. In all however we have the one lesion which is characteristic, namely, the structure of ordinary tubercle in which bacilli can be found. The tubercles appear to originate in the middle layer of the corium, at all events that is the chief seat of them; but the papillæ are involved where there is a tendency to ulceration, and in places the whole depth of the corium with the adjacent layers of the subcutaneous fat are attacked. In these tubercles, giant cells, fibroblasts and granulation cells can be seen, the more chronic the lesion the greater the number and the more distinct the giant cells.

When the subcutaneous tissue is attacked the extension appears to take place along the blood vessels which are surrounded by an infiltration of granulation cells, and in places where tubercles have already formed the giant cells appear as though they had originated in vessels which have become thrombosed.

Koch was the first to demonstrate tubercle bacilli in lupus, and his observation has been confirmed by many others. I have personally examined a dozen cases and have found bacilli in half of them, in one case the bacilli being fairly numerous, and in all the other cases very few. The search for bacilli must be very thorough, often as many as sixteen to twenty sections being examined before a single bacillus is found, and if the evidence of the tuberculous nature of lupus depended solely upon the presence of bacilli demonstrable by the microscope I am bound to admit that there would be justification for doubt. We have however abundant evidence in the general tubercular structure of lupus, in the possibility of making cultivations of tubercle bacilli from it, in the tuberculosis set up by inoculating lupus tissue into animals, and in the not uncommon association of lupus with other tubercular lesions, that the disease is what I have termed it, a chronic tuberculosis of the skin.

Koch found that bacilli cultivated from lupus set up tuberculosis in animals, and he, with Martin, Cornil, and Leloir, has also succeeded in producing tuberculosis by inoculating lupus tissue, whilst Eve[*] has twice succeeded by inoculating with lupus tissue in producing in rabbits a disease which closely resembles lupus, and which eventually healed without producing any further mischief. This observation is of extreme interest, because by inoculating guinea-pigs from the same lupus case he set up general tuberculosis, the different results in the rabbit and guinea-pig being explained by the different susceptibility of the two animals to tuberculosis, the guinea-pig being the most sensitive animal known.

Those who maintain that lupus is not a local tuberculosis are apt to assert, somewhat positively, that we do not see lupus associated in man with other tubercular lesions. I am, however, satisfied that it is not at all uncommon to find other parts affected. At the present time I have under observation a woman with lupus of the face and phthisis; a man with lupus of the ankle on one foot, tubercular osteitis of the metatarsus, tubercular glands in each groin, and tubercular glands on each side of the neck, around which very characteristic lupus developed; also a boy with lupus of the face and enlarged glands beneath the chin, an association which is not infrequently found, and I have made an autopsy on a man with phthisis and lupus of the nose and upper lip, bacilli being found in each. My friend, Mr. Marsh, tells me that in one of his cases injected for lupus with Koch's lymph, there was such enlargement of tubercular glands in the neck as to produce real anxiety from pressure symptoms, and I am confident that the more thoroughly the examination is carried out the more frequently will other tubercular manifestations be found co-existing with lupus. Monsieur E. Besnier,[†] who has paid much attention to this subject found lupus associated with other tuberculous conditions eight times in 38 cases, and Doutralepoint[‡] has published a case in which tubercular meningitis supervened upon lupus.

It is then more than probable that lupus sometimes holds the relation to general tuberculosis of cause and effect, and that secondary infection of lymphatic glands and lung should always be sought for. There can, however, be no doubt of the fact that the tuberculous process is slower and of lower infective power than the acute skin lesion I first described, and one naturally seeks an explanation of these conditions. It is to be found I think in the method in which the skin is primarily infected, in the particular layer of tissue first involved, and to some extent by the different degrees of resistance to the growth of the bacilli in different individuals.

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[*] *B. M. J.*, March 24th, 1888.

[†] *Annales de Derm. et de Syphiligraphie.*

[‡] *Deutsche Med. Wochenshrift,* No. 7, 1885.

How does the lupus start; or rather, by what route is the infection brought to the skin? Obviously either from within by the blood-vessels, or from without through the surface. Looking to the large proportion of patients in whom lupus attacks exposed parts of the skin, especially the face, it is probable that bacilli find entrance either through the hair follicles, or through the sebaceous and sweat glands, or it may be through tiny abrasions in the surface. That these openings admit the bacteria concerned in acute suppuration there is abundant clinical and experimental evidence to prove, and as the pus organisms, like the tubercle bacillus, have no motive power, each is dependent on an external force, that is, friction for its lodgment.

The question of the means by which the tubercle bacillus obtains access to the skin has another important bearing. If by the path I have suggested, only very few of the bacilli are likely to find entrance together, possibly only a single organism at any one time. Now it is pretty well determined that the local and general effects of bacteria introduced into an animal by inoculation depend upon the number of the bacteria inserted; if very few, they may not develop at all; if in somewhat greater numbers, there may be only local manifestations of disease; if in much larger numbers, then both local and general results follow, and it is not unreasonable to believe that inoculations with the tubercle bacillus are subject to the same rule. Another condition which would interfere with the growth of the tubercle bacillus in lupus is, that in the superficial portions of the skin, the temperature of exposed parts is below the favourable temperature for the growth of the bacillus, viz., 99 F., and often approximates to a temperature at which it ceases to develop, that is about 84 F. Again, the insertion of tubercle bacilli into the subcutaneous tissue such as would occur in a *post mortem* wound, may provide it with a more suitable seat for its development than is to be found in the skin itself, for it has been found that slight variation in the exact seat of inoculation with other bacteria has a most important effect on their development. Watson Cheyne * has shewn with the Proteus Vulgaris that if injected into the back of a rabbit superficially to the muscles, it only caused a large abscess, whilst the same quantity of virus injected into the muscles themselves produced the death of the animal.

I have dwelt thus at length upon the causes which I think explain the chronicity and slight infecting power of lupus when compared with the acute tubercular skin lesion because I hoped thus to make the connection between the two lesions more apparent. It is not difficult by clinical observation to shew this. I have under my notice whilst writing, a girl, of whom I shew a drawing, with patches on the hand and above the elbow having the ordinary appearances of lupus, whilst between them there are some small tubercular abscesses breaking down into ulcers and apparently occupying the course of the lymphatic vessels. If one notices carefully the skin around suppurating tubercular glands it is not uncommon to see patches of ulceration in the skin characteristically tuberculous, and in the neighbourhood nodules which have the appearance of lupus and arise by infection from the pus discharged from the glands. So it may be with tubercle in joints, and I shew here a patch of skin tubercle like hypertrophic lupus, which arose in the skin of the thigh after amputation of a tuberculous knee.

By the kindness of Mr. Watson Cheyne I am enabled to shew you a specimen of tubercular ulcer of the skin produced in a curious way. A patient of his was admitted into hospital with recurrent tubercular glands in the neck, and whilst there developed an attack of varicella. One of the vesicles at the base of the neck became abraded and the pus from the discharging glands running over it infected the sore and produced the ulcer of which I shew you a section.

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* "Suppuration and Septic Disease." Reutland, 1889.

I have only one more word to add, and it is that in some few cases an injury seems to be the starting point of lupus when there is no reason to suspect that the skin was directly infected by the traumatism.

ON THE RELATION OF ERYTHEMA PERNIO TO TUBERCULOSIS.

BY LESLIE PHILLIPS, M.D., BRUX.

An observation by Hutchinson that in two cases old chilblains reacted to tuberculin appears to have led to a misinterpretation of the pathological significance of the phenomenon, for the observation has been used as evidence of the non-value of the drug as a diagnostic agent. It is probable that the sounder position would be to recognise the strong support which the reaction gives to the views of Iscovesco[*] of the tubercular nature in many cases of the disease in question. This observer pointed out that ulceration in erythema pernio is liable to occur in the scrofulous, and that the secretion of such ulceration produces tuberculosis when inoculated in the rabbit.

In the following case under my own care the relation of the phenomena appears plain. A young girl with lupus of the nose was admitted for treatment by tuberculin. She had an unbroken chilblain on the great toe which reacted strongly to the first injection of the drug and immediately broke down into an ulcer, which in the course of the injections healed.

Iscovesco has properly pointed out that broken chilblains may be a more serious condition than they are usually regarded as, and may become the focus of cutaneous tuberculosis. It is possible, from the lights recently thrown upon the subject of tuberculosis that the significance and importance of the condition would not cease here, but that the lesions might even form a starting point of a more general infection.

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[*] International Congress of Dermatology and Syphilography, 1889.

The treatment indicated by these considerations is the rapid healing of the ulcerated pernio, either by injections of tuberculin or by suitable caustic applications such as lactic acid, followed by a healing topical application of sulphide of zinc lotion, an ointment of iodide of lead, or one of phenol combined with Wilson's zinc ointment.

PERISCOPE.

DISEASES OF THE CHEST.

BY ARTHUR FOXWELL, B.A., M.B.

Penetrating Wound of Thorax and Abdomen.—C. K., 24, was stabbed just below the 12th rib in the mid axillary line on the left side. The probe passed four inches obliquely in and up. Next morning there was free hæmoptysis, but this soon ceased upon the administration of ergotin and gallic acid. The whole left side of the chest was dull, the dulness being absolute at the base. Temperature normal, pulse only slightly quickened. The dulness rapidly disappeared and the wound healed quickly. There was never any pyrexia nor any abdominal symptoms except some flatulence during the first four days. In a fortnight he was discharged, perfectly well. The lung as well as the pleura had been no doubt perforated, hæmothorax and hæmoptysis resulting.—*Boston Medical and Surgical Journal.* J. T. Moore, M.D., March, 1891.

Lobar Pneumonia.—Dr. Francis Delafield, at the annual meeting of the Medical Society of New York State, in February last, stated that he did not think it possible for a regular exudative lobar pneumonia to be succeeded by a chronic productive inflammation, such a pneumonia ending either in death or resolution. When a lobar pneumonia ended in producing connective tissue then it was, *from the outset*, a special form of inflammation. The pathological stages of this pneumonia were as follows:—1. In addition to the ordinary lobar exudation some of the air-cells were filled with plugs which sent prolongations from one cell to another; these plugs were homogeneous or finely fibrillated, and never large enough to fully fill the cells; swelling and thickening of the cell walls were also present. 2. New cells, of connective tissue type, were formed in these plugs, while the walls of the air-cells became more swollen and might have a small cell infiltration. New blood vessels also appeared in the plugs, and these could be artificially injected from the pulmonary vessels. The naked-eye appearance of the lung was now characteristic; one or more lobes were consolidated, but they were not large; their cut surface was smooth, not granular, and their colour red or green. 3. The growth of connective tissue in the air-cells, in their walls and along the arteries and bronchi, was so extensive that many of the air-cells were obliterated. The lung was red, mottled with white, gray, or black, and was dense and hard. Portions of it might be necrotic, cheesy, and broken down into cavities. Clinically speaking, there was usually something about the early symptoms which rendered a diagnosis possible, the temperature was not high, and there was a strong tendency to the typhoid state. There was no reason why recovery should not occur.

The Importance of Destroying Phthisical Sputa.—Dr. Arthur K. Stone insists upon this as a result of an investigation into the viability of the bacilli which he prosecuted in the bacteriological laboratory of Harvard Medical School.

He first set aside, for three months, eight jars containing sputum which was known to possess bacilli. He then examined the sputum afresh, and in all cases found the bacilli retained their form and power of taking the stain intact. Second, he further set aside these jars for a period of three years. At the end of this time all moisture had vanished, only a little dry dust remaining in the jars. This dust was dissolved and examined as before, and "practically no other bacteria were present, but the bacilli took the stain beautifully, and appeared as bright red as though they had been stained from a fresh specimen." Third, he inoculated subcutaneously six rabbits with this dust. These he killed at the end of forty days, but "the few bacilli found might have simply been some which were placed there by the inoculation." The remaining three he re-inoculated into the abdominal cavity and killed them in fifty-four days. In one he found several nodules in various parts of the omentum, mesentery, and parietal peritoneum, and specimens taken from these and stained, all shewed bacilli. In the second rabbit these nodules were very numerous, and the liver and spleen also shewed some; while specimens from them all shewed scanty but perfectly distinct bacilli. The third rabbit only had one nodule, at the point of inoculation; but here there had been a doubt, owing to the syringe leaking, as to whether the inoculating fluid reached the abdominal cavity. Hence Dr. Stone considers it absolutely essential to destroy all sputa of phthisical patients. The best way he says is to burn it, as perchloride of mercury and carbolic acid take so long to destroy the bacilli that the sputa will probably be flung away before their destruction is complete. He recommends spittoons of paper, which can be flung bodily into the fire.—*American Jour. of Medical Sciences*, March, 1891.

Condition of the Heart in Anæmia.—Dr. Handford, in a valuable paper on the condition of the heart in anæmia (in the *American Journal of the Medical Sciences* for December, 1890), says that the enlargement of the heart in this disease is chiefly right-sided, for the apex beat is invariably displaced outwards and generally little if at all downwards, being usually indeed in the fourth space. He believes the enlargement to be due to one of the following causes:—1. Congenital narrowing, or delayed development of the aorta and the aortic arterial system, requiring greater pumping power to supply the needs of the circulation. 2. Increased peripheral resistance from unequal changes in the specific gravity of the component parts of the blood. [If the corpuscles become either heavier or lighter than the plasma, they will move less in the axial and more in the peripheral stream, and hence produce more friction and so increase the pumping power required by the heart.] 3. Malnutrition and degeneration of the cardiac muscle, from the circulation through its walls of blood deficient in quality. 4. Overwork.

Dr. Handford believes the commonest murmur has its maximum intensity in the second or third left space, usually the second, close to the sternum, and that it invariably becomes much less loud, and frequently totally disappears, in the erect position. In his opinion it is caused by the pressure of an enlarged, flabby, and dilated heart on the pulmonary artery, this pressure being chiefly communicated through the fibrous ring surrounding the pulmonary valve. His reasons for not adopting Naunyn's theory of this murmur being due to mitral regurgitation are—1. The point of maximum audition is not to the left of the pulmonary artery but over it. 2. There is no sufficient evidence that the left appendage comes into contact with the chest wall, especially as the dilatation of the right ventricle pushes the left auricle further backwards. 3. And chiefly, a murmur of a different character is often heard at the apex at the same time, which does not disappear on the patient's assuming the erect posture, but, as the patient improves, often disappears even in the horizontal position some weeks before the pulmonary one.

The treatment may be summed up in a few words—rest, food, aperients, iron. Complete rest in bed for a week or ten days, with half a day in bed for another week or fortnight. More albuminoid food than is usually given. Saline aperients. No digitalis, except in those cases which cannot rest or where the heart is too rapid even during rest.

Pericardial Friction, its semiological value, and its different modifications under the influence of respiratory movements.—A general review based on the writer's inaugural thesis on the same subject (Lyon, 1890) and on 47 unpublished cases occurring chiefly in Prof. Lépine's clinic.

1st. *Its semiological value.*—Friction-sound, whether pre- or meso-systolic in time can, in conjunction with the heart sounds, give rise to a galloping sound. This is especially the case at the beginning or end of an attack of pericarditis. The points of maximum audition are, 1, the right ventricle; 2, the pulmonary artery; 3, the apex. Chronic plastic pericarditis is usually limited to the pulmonary artery. It is often impossible to diagnose friction-sounds in this region from those of anæmic spasm of the artery, and especially from pleuro-pericardial sounds.

As a rule friction-sounds are not conducted in any direction, but we have come across a notable exception to this.

Cardiac energy is a very necessary factor in the production of friction: M. Lépine says—"Without a strong heart there is no friction; with a large heart friction may be loud even when the exudation is soft or when there is no exudation."

The existence of pericardial friction without pericarditis is proved by fifteen autopsies made by Pleischl, Dittrich, Metterheiner, Eichhorst, Loechener, Gendrin, and Jaccoud. The writer has also published four of Lépine's, where the friction-sound, sometimes double and wide-spread, persisting the day before death or a few days previously, had given rise to the diagnosis of pericarditis, and yet, at the autopsy; the serous membrane was absolutely healthy, but the heart was large. Cardiac hypertrophy also existed in all the fifteen previously mentioned cases.

Pressure increases or even brings into existence the friction-sound; this is due to its pushing aside the layer of fluid; but it may diminish it, and then there is no fluid to push aside.

2nd. *Its modification by respiration.*—The writer comments on the scanty attention this has received and mentions Traube's view that usually endocardial murmurs were increased in expiration because during inspiration the lung covered the heart more fully, whereas pericardial sounds were usually increased during inspiration as in pericarditis the lung was generally fixed. He points out that most German authors agree with Traube, including Lewinski, who, however, mentions a case where the friction was only heard during expiration, although the lungs were found to be bound down in the position of expiration. He then tells his conclusions deduced from careful, repeated examinations of twenty-one cases. In six the effect of respiration was very complicated and ill-defined; in six there was an increase of the friction-sounds during inspiration; and in nine they were loudest during expiration. Further, in nearly every case where the friction was increased during inspiration there was marked emphysema, and generally the increase and emphysema were in direct ratio; on the other hand, there was an increase during *expiration* in those with healthy lungs and pleuræ, or who had adherent pleuræ.

These results he explains thus:—1. The parietal pericardium is thin and mobile, with no adhesions to any fixed organs, and it is surrounded by organs which are able to displace it, and lastly, it gives insertion to the diaphragm. 2. During inspiration the pericardium, along with the other thoracic organs, undergoes a diminution of pressure; the antero-posterior enlargement of the thorax tends to raise the anterior surface of the parietal pericardium from the visceral, especially if it be adherent to sternum or rib. If there be any pericardial effusion, it will tend therefore to occupy the anterior surface, while the lungs will also occupy more of the præcordial space. 3. But the descent of the diaphragm produces exactly an inverse effect to this—it will tend to produce a special lessening of pressure between the diaphragm and the heart, and thus to draw any pericardial effusion which may exist to this situation, and hence remove it from the anterior surface and allow the two pericardial layers to come together here, this action being further enhanced by the traction put upon the parietal layer by the diaphragm's descent, and which traction will moreover make it a more or less rigid stretched surface, and so more suited to produce friction-sounds. 4. During ordinary respiration in subjects with healthy lungs and pleuræ these two contrary forces nullify each other, and hence ordinary respiration produces no change in the friction-sounds in these individuals. 5. It is otherwise with forced respiration; this is chiefly costal, and hence, even with healthy lungs and pleuræ, the friction-sounds will be lessened during inspiration. 6. The same result occurs where the costal respiration is exaggerated from pathological causes, *e.g.*, adherent pleuræ. 7. But where the diaphragmatic respiration is exaggerated, either normal or forced, as happens especially in emphysematous subjects, then the friction-sounds are *increased* during inspiration.

As aids to the diagnosis of pleuro-pericardial from pericardial friction, he says the former (1) are less influenced by the heart during superficial breathing; (2) are diminished and often disappear during forced inspiration, and are often exaggerated by forced expiration; (3) are still more variable than pericardial friction; (4) are sometimes only heard when lying on the left side; and (5) are usually only systolic, but may be diastolic or both.—Dr. E. Chabalier, *Revue de Médecine*, March, 1891.

Pulsus Bigeminus and Quadruple Aortic Murmur.—In the *Glasgow Medical Journal* for February, 1891, Dr. T. W. Anderson records the case of a man who developed pulsus bigeminus a week after his admission to hospital at a time when he complained of a good deal of dyspepsia. This continued for eight days, when an occasional single beat occurred amongst the coupled ones. [Improvement in the gastric symptoms had been noted for two or three days previously.] The single beats gradually increased in frequency, and two days later the pulse became quite single.

On admission he had a well-marked double aortic murmur, but during the existence of the coupled pulse this murmur became quadruple—first, a loud and hissing sound; then two equally short, soft, and faint ones; lastly, one of medium intensity, but the most prolonged of all. These quadruple sounds Dr. Anderson explains as resulting from the fusion of the aortic murmurs resulting from the coupled heart-beats occurring so quickly one after the other. In accordance with this, he noticed that as the coupled changed into the single beats, the former were accompanied by a triple murmur only, the two middle soft ones being no longer to be separated by the stethoscope.

Dr. Anderson believes that the pulsus bigeminus is a functional phenomenon, dependent upon disturbed innervation rather than upon organic cardiac lesion. He thinks this is well shewn in the present instance by the intimate relation which existed in his patient between the pulse and digestion.

GYNÆCOLOGY AND ABDOMINAL SURGERY.

BY LAWSON TAIT, F.R.C.S., AND CHRISTOPHER MARTIN, M.B., C.M.

Vaginal Fixation of the Stump in Hysterectomy for Myoma.—Dr. Henry Byford (*Trans. Amer. Gynæc. Society*, 1890).—The following are the leading steps of the operation :—

1. Ligate the broad ligaments.
2. Separate the bladder from the cervix.
3. Put a temporary elastic ligature below the tumour.
4. Transfix and cut off the mass above.
5. Ligate the stump in several parts with silk.
6. Remove the elastic ligature.
7. Perforate the anterior vaginal wall in front of the cervix by pushing a pair of compression forceps through from the peritoneal cavity into the vagina.
8. Turn the stump forward—*i.e.*, antevert it—into the vagina, and clamp it firmly there by means of Dr. Byford's clamp forceps. These forceps are introduced into the vagina from below, and the handles project beyond the vulvæ.
9. Sew the peritoneal edge, that was separated along with the bladder from the anterior surface of the uterus, to the posterior

surface of the stump, so as to shut off the peritoneal cavity from the vagina.

10. Close the ventral incision, having made the usual toilet and inserted a drainage tube if necessary. The stump in the grasp of the forceps sloughs off from the ninth to the fourteenth day.

A small strip of iodoform gauze, stuffed from below into the rent in the anterior vaginal wall and left for twenty-four or thirty-six hours, may be used to prevent any possible accumulation of discharge at this point. The time occupied in separating the bladder and anterior vaginal wall from the cervix and putting on the clamp forceps should be no longer than for the preparation and adjustment of the stump in ventral fixation. The other steps are practically the same.

As to the final position of the cervix: In each case the shortened upper end worked its way back into the connective tissue behind the bladder, so that in a few weeks the os and cervical canal were normal as to position and mobility. Bladder symptoms were not present in any case. Dr. Byford performed this operation in ten cases, with one fatal result—from septic peritonitis.

There are two great causes of death after hysterectomy—recurrent hæmorrhage from the stump, and septicæmia. If bleeding occurred in a case treated after Dr. Byford's method, it would be almost impossible to control it; and we think the risk of septicæmia much greater than where the stump is fixed extra-peritoneally at the lower angle of the abdominal wound.

The sexual life of the female after removal of the uterine appendages.—Dr. Keppler, Venice ("Transactions of the Tenth International Medical Congress").—The author followed up the after history of 18 cases in which he had performed the operation. It was always performed for gross diseases of the sexual organs, such as pyosalpinx, salpingitis, oöphoritis, uterine myoma—and never for psychosis or neurosis. Both tubes and ovaries were always removed. The therapeutic effects were good, the patients in all cases being relieved of their symptoms.

The anatomico-physiological results were likewise uniformly good :—

1. In no case did a typical menstrual hæmorrhage occur after the operation.

2. The countenances of the women remarkably changed, and the women became quieter and more beautiful (!).

3. In all cases the conjugate diameter of the pelvis became shorter, this effect being more pronounced in the younger patients; the shortening amounted to two to three centimetres.

4. The vagina became shorter and narrower, the mucosa thinner, smoother and paler. The cervix became shorter, the uterus smaller, the introitus vaginæ narrower.

5. The breasts became smaller and the nipples paler.

6. The tendency to become stouter which has been described by other operators was not observed in any case.

7. The sexual instinct was always preserved. Three patients, virginal before operation, married later and lived in happy wedlock. The passions persisted, particularly when the operation was performed early on young persons.

8. In myoma the results of the operation were good both as regards the hæmorrhage and the shrinking of the tumour.

The Law of Periodicity in the Physiological Functions of the Female.—Dr. Van Ott, St. Petersburg.—Apart from the nervous phenomena occurring in women at the time of menstruation, there are a number of alterations of normal functions which appear in typical and periodical waves, which the author has observed by the aid of intricate apparatus. Briefly the results of these observations shew that the curves of the bodily temperature, of the blood pressure, of the muscular power, of the respiratory capacity, of the intensity of inspiration and expiration, and of the excitability of the nerves reach their acme a short time before menstruation; but during the period they sink below the normal. Parallel experiments made upon old women and young girls, respectively after and before the child-bearing age, shew instead of curves almost straight lines. Hence the numerous observations of the author demonstrate that there is a law of periodicity governing the physiological functions of the female from puberty to menopause.

New Plates for Intestinal Anastomosis.—Dr. F. B. Robinson (in the *North American Practitioner, etc.*, October, 1890).—Dr. Robinson has made a careful experimental study of intestinal surgery, and has devoted much time to perfecting and simplifying the operation of anastomosis. Senn, who originated the proceeding, uses perforated discs of decalcified bone for approximating the serous surfaces of the two loops of bowel to be united. Senn's plates are open to the objections that they take from ten to fourteen days to prepare, and are costly. Dr. Robinson has devised two plates, each of which can be prepared in a very short time and at very little cost.

1. The *raw hide plate* is made by taking a piece of cow hide from a freshly killed animal. It must be washed, all the subcutaneous fat clipped away, and all the hairs shaved off. It is then cut into oval discs about two to two and a half inches long and about one inch and a quarter wide. In the centre of this disc a small hole is cut large enough to admit the little finger. Into each plate are inserted six sutures, each thread being attached to a separate needle. These sutures are fastened to the plate about midway between the margin of the plate and the margin of the central perforation. The two loops of intestine are then incised longitudinally and a plate slipped into each, so that the central perforation of the plate corresponds with the centre of the incision in the bowel. The six needles attached to each plate are made to transfix the intestinal wall around the incision from within outwards. The corresponding sutures are then tied, and in doing so they approximate the serous surfaces around the incisions in the bowels. The hide is slowly dissolved (digested), but not until the two serous surfaces have united firmly around the anastomosing passage. The plates can be prepared beforehand, and preserved in alcohol, ready threaded.

2. The second plate Dr. Robinson has devised is very easily made. It is called the *segmented rubber plate*, because it is

made of two pieces of soft indiarubber sheeting. The two segments, each somewhat half-moon shaped, overlap along their line of junction, and form, when united, an oval plate two to two and a half inches long and one to one and a quarter inches broad, with a central perforation The two segments are held together by means of a stout catgut ring and catgut sutures. Six threads fixed to six needles are then fastened to the plate around the central hole. The rest of the operation is identical with Senn's operation. In about five days the catgut is dissolved (digested), and then the two indiarubber segments of each plate fall apart and are passed per anum.

The Modern Treatment of Peritonitis.—Dr. Emory Lamphear (*Kansas Medical Index*).—Dr. Lamphear sums up as follows:—

1. The treatment with saline purgatives should be adopted early in simple acute peritonitis.

2. Small doses of calomel may be given to mild purgation in cases seen after the disease is fully developed.

3. Cases which fail to be relieved by cathartic measures should receive early operative interference.

4. Whenever peritonitis has gone on to that stage where the formation of pus is known, or even suspected to have taken place, abdominal section and drainage are imperatively indicated.

5. When the existence of tubercular peritonitis is diagnosed or strongly suspected, operation (exploratory incision) is advisable.

6. Opium is indicated only in the second stage of peritonitis, and then not because it "forms a splint," but because it relieves pain, sustains the heart, and prevents shock; thus combating the tendency to death.

A supposed case of Interstitial Pregnancy.—Dr. Robert Grandin (*Amer. Jour. of Obst.*, Jan., 1891).—This case is recorded as one of probable interstitial pregnancy which ruptured into the uterine cavity. The patient was 25 years old, had been married ten years, had had five children, her last confinement being eighteen months previously. She nursed her baby until its death in October, 1889. She did not menstruate during lactation, and the amenorrhœa continued to February, 1890, when she was suddenly seized with colicky pain in the abdomen and profuse hæmorrhage. This was controlled by rest, ergot, and the vaginal tampon. At the end of March profuse hæmorrhage set in and nearly killed her, and she passed what looked like a decidual membrane. From this date till September, 1890, she suffered from recurrent rather profuse hæmorrhage. When seen by Dr. Grandin she was anxious-looking, had bearing down pelvic pains, constipation, and when not flooding a reddish yellow vaginal discharge, On examination a large symmetrical, heavy, apparently subinvoluted uterus was felt. Dr. Grandin curetted the uterus and removed a quantity of vegetations and debris, but nothing was felt suggestive of pregnancy. Next day the patient had a chill, and the temperature rose to 105° F. and the pulse to 120. There was nothing found on examination to account for the fever. Profuse flooding set in the following morning. He inserted four fingers into the uterus and "from *a cavity in the muscular wall*" of the organ near the left tubo-uterine junction, he removed an adherent placenta, perfectly sweet, and about the size that organ would be at the fourth month of gestation. He curetted this cavity, and swabbed it out with pure carbolic acid. Amongst the clots passed previous to his arrival he found a flattened partially desiccated fœtus about three and a half months advanced. The patient made an excellent recovery.

From the above facts Dr. Grandin concludes—"That in February an interstitial gestation sac ruptured partially into the uterus. This partial rupture healed. In March the patient passed a uterine decidua. The pains and irregularly recurring discharges from which she suffered thereafter until September were due to the efforts of the uterus to rid itself of its parasitic intruder. The operation of curetting broke down the wall dividing the true uterine cavity from the muscular bed in which the flattened distorted fœtus and its placenta lay. This traumatism spurred the uterus sufficiently to enable it to expel the fœtus."

We do not think that Dr. Grandin has at all proved his case. Precisely the same chain of events would occur if the uterus were septate or bicornate. It is almost impossible to prove a case of interstitial pregnancy without the certain evidence of the *post mortem* theatre or the operating room. The rule that Mr. Lawson Tait laid down still holds good, that all cases of interstitial pregnancy rupture into the peritoneal cavity, and unless promptly treated by abdominal section, die.

On some Points in the Technique of Laparotomy.—Dr. Halliday Croom (*Edinburgh Medical Journal*, 1890).—Dr. Croom's experience is derived from two hundred cases, which have afforded him an opportunity of seeing and dealing with most of the accidents and varieties of the operation of abdominal section. With regard to the relation of menstruation to the period of operation, Dr. Croom thinks that there is no objection to operation during the menses or after the period has ceased, but it is unwise to operate when menstruation is imminent, as it favours the formation of a hæmatoma. He advises an antiseptic vaginal douche just before operation if the patient is menstruating.

Before the operation three things are requisite—an empty bladder, an empty intestinal tube, and a clean skin. He advises that the pubic hair should be shaved off, and that the skin of the abdomen should be washed first with soap and water, next with turpentine, and lastly with corrosive sublimate solution.

Dr. Croom discusses the question of antiseptics in abdominal surgery. He has abandoned the spray, etc., but still uses germicides in a modified form. He washes out the abdomen with warm corrosive sublimate solution, 1–5000, and soaks the towels surrounding the wound with the same. In only one case was there mercurial poisoning. His main care, however, is to have clean hands, clean sponges, and absolute cleanliness of the patient's skin and surroundings. "If we have these we have all that is essential to a safe laparotomy, as far as sepsis is concerned. But as absolute cleanliness on the part of the patient, assistants, and nurses is not to be relied upon, the employment of modified antiseptics supplies the necessary safeguard."

Dr. Croom prefers ether, given with Clover's inhaler, as the anæsthetic, except in broncho-pneumonic conditions, when chloroform is given. He advises that a full stimulant should be given just before the operation. He makes his incision exactly in the middle line wherever possible. He does not think that the mere length of the wound makes much difference either in the production of sepsis or subsequent hernia In fact, the only two herniæ he has seen in his two hundred cases occurred in women in whom the incision was exceptionally small. The parts can be manipulated with greater accuracy, hæmorrhage more effectually controlled, and complications treated more safely through a large than through a small incision.

With regard to adhesions, he advises that they should be separated rapidly with the hand, finger-nail, or sponge, and the after-hæmorrhage, which is often profuse, controlled entirely by hot water. Where there are large vessels, as in the omentum or mesentery, these must of course be tied. Oozing from adhesions may be stopped in one of three ways: by filling the abdomen with hot antiseptic water and leaving it so for some minutes; or by packing the abdomen with hot sponges for some minutes; or by painting any bleeding surfaces with a styptic, such as turpentine. After all, a little blood left in the abdominal cavity does little harm, and is quickly absorbed. In dealing with bleeding from deep pelvic adhesions, he first tries firm packing of the pelvis with sponges. If this fails, he tries to secure the bleeding vessel aided by reflected light, and, if necessary, enlargement of the abdominal wound and eventration.

He secures the pedicle, except in cases of hysterectomy, with either the Staffordshire or Banlock knot. It has slipped only twice. In cases where there was no pedicle—the tumour being sessile on the uterus—he used the clamp and cautery with success. In six cases where the pedicle could not be tied he treated it extra-peritoneally. The tighter the ligature is drawn the better. He does not often employ the drainage tube, as after careful washing of the abdomen its use has been to him superfluous. But it is of great value in suppurative and tubercular peritonitis. On the other hand, he considers that there is no more important proceeding in abdominal section than careful irrigation of the abdominal cavity. It is certainly an essential where there has been much manipulation, any hæmorrhage, any rupture of the tumour, any handling of the intestines, or any separation of adhesions. He uses a weak corrosive sublimate solution with a temperature of 115° F. to 120° F. After the irrigation the cavity is well sponged out, although a residuum of fluid does no harm.

Radical Cure of Strangulated Femoral Hernia by Suprapubic Laparotomy—new method.—Dr. H. W. Maunsell (in the "Transactions of the Intercolonial Medical Congress of Australasia".)—Dr. Maunsell operates as follows:—"An incision large enough to admit two or three fingers is made in the middle line just above the pubes. The hernia is reduced by pulling the intestines or omentum out of the hernial sac, through the ring into the abdomen. A long strong handled needle with a slightly curved point is then introduced from without inwards through the skin over the saphenous opening in the upper part of the thigh, piercing the fascia covering the pectineus muscle, and the lower or posterior border of Gimbernal's ligament at its attachment to the pectineal line and near its base or free outer margin. During this stage of the operation the point of the needle is driven on to the tip of the operator's right forefinger, introduced through the abdominal wound and pressed over the pectineal line at the lower or posterior border of Gimbernal's ligament. Protecting the point of the needle with the finger it is brought out through the abdominal wound and threaded with No. 1 surgical suture silver wire. The needle carrying this wire is drawn back through the same puncture to the position just described over the saphenous opening. The wire is removed from the needle and the needle passed once more through the same external opening from without inwards, this time passing over Poupart's ligament immediately above and slightly internal to the femoral vein and out through the abdominal opening, and the other end of the wire brought back. The two ends of the suture wire coming out through the same puncture in the skin over the saphenous opening are pulled down, screwed up tight and cut off short. The twisted ends immediately retract out of sight deep in the tissues of the groin, below Poupart's ligament and over the femoral opening which they completely occlude."

This operation we think will prove a distinct improvement, and deserves a trial. The needle in the second stage of the operation passes very close to the femoral vein, and great care will be necessary to avoid wounding the vessel.

New Method of Treating the Stump in Porro's Operation.—Dr. Maunsell (*New Zealand Medical Journal*, January, 1891).—

1. "The incision is made long enough to permit of the gravid uterus being taken out of the cavity of the abdomen.

2. The upper part of the wound is closed with salmon gut sutures behind the uterus.

3. The uterus is opened in its upper third by a longitudinal incision, and the child removed.

4. The neck of the uterus is transfixed with a strong pin, and the rubber tourniquet applied below it.

5. The vessels of the broad ligament are ligatured *en masse* on both sides just above the pin and tourniquet.

6. Pack round with sponges. Make a transverse incision through the peritoneum covering the top of the uterus, and rapidly reflect it to within half an inch of the rubber tourniquet. If the peritoneum is found to be very adherent to the fundus, make a circular incision all round the upper third of the uterus and reflect it as above described.

7. Apply Kœberle's pin and wire serrenœud to the neck of the deperitonised uterus.

8. Amputate the uterus with a large circular amputating knife, leaving a fair stump beyond the pin.

9. Apply torsion and ligatures to any bleeding points as the assistant slowly and cautiously removes the rubber tourniquet and transfixion pin immediately above it.

10. Secure the lower end of the laparotomy wound immediately above the stump with a strong acupuncture needle.

11. Place a thin layer of iodoform wool under the reflected peritoneum, which is spread out like a saucer round the stump. Secure the edges of the reflected peritoneum loosely to the skin by five or six horsehair sutures.

12. Screw up the wire clamp daily. Dress the stump night and morning with a thick layer of iodoform and absorbent wool."

Dr. Maunsell also advocates this method in cases of hysterectomy for myoma. He sums up its advantages as follows:—(*a*) "The bladder and ureters cannot be injured by the wire serrenœud. (*b*) There is no tension of the peritoneum or broad ligaments. (*c*) The stump cannot retract into the cavity of the peritoneum, and is effectually shut off from that cavity. As the stump shrinks and sloughs away it is impossible for the discharge from it to drain on to the abdominal wound or into the cavity of the peritoneum."

Dr. Maunsell has apparently never performed this operation, and he is evidently only a surgeon on paper. There are many objections to his method. It is quite unnecessary to make such a long abdominal incision and to deliver the uterus through the wound before extracting the child. The rubber tourniquet should be applied before and not after the uterus is incised. He forgets that both in the pregnant uterus and in a myomatous uterus there are enormous veins immediately beneath the peritoneal capsule. These would probably be torn in "deperitonising the stump," and would certainly not be controlled by the serrenœud. Further, the "saucer-like" cup of reflected peritoneum not being constricted by the wire, would be a living raw surface, and would certainly absorb poisonous matter from the necrosing stump. Lastly, the transfixion pin first introduced pierces tissues below the grasp of the wire serrenœud, and if it wounded a large vessel, the hæmorrhage would be difficult to arrest. For these reasons we condemn Dr. Maunsell's new method *in toto.*

URINARY AND RENAL DISEASES.

BY ROBERT SAUNDBY, M.D., F.R.C.P.

Albuminuria of Pregnancy and Puerperal Eclampsia.—Dr. Lantos, of Buda-Pesth, has recently made a series of observations on albuminuria of pregnancy in the wards of Professor von Kézmársky. In over 18 per cent. of seventy pregnant women he found albumen in the urine, whilst in nearly 60 per cent. of six hundred newly delivered women the urine was albuminous. Albuminuria was detected in over 70 per cent. of two hundred and sixty-eight primiparæ, and over 50 per cent. of three hundred and thirty-two multiparæ. The percentage was distinctly lower in premature labour, and 50 per cent. lower in abortion cases. Out of ten cases where albumen was abundant, so that Dr. Lantos used the microscope, he found pus in three and casts in five, but no foreign elements in the remainder. He examined the kidney in thirty-nine cases where the patients had neither died from eclampsia nor from nephritis. In fifteen of these cases the kidneys were very anæmic, in twenty-one pale, and only in three full of blood. Amongst the local changes in other cases he found acute parenchymatous nephritis in two cases, acute hæmorrhagic nephritis in one case, parenchymatous degeneration in nine cases, and in four albuminous degeneration.

Dr. Lantos therefore concludes that, putting aside all evident and probable cases of nephritis in pregnant women, albuminuria is not rare in pregnancy, and very common after parturition. He refers the phenomenon to reflex irritation of the vasomotor nerves of the renal vessels; it has no pathological significance; and, in conjunction with other symptoms, is a valuable diagnostic sign of pregnancy. Out of 14,815 labours observed in the course of fifteen years, he noted 53 cases (0·36 per cent.) of puerperal eclampsia—a ratio of 278 to 1. Over 78 per cent. out of forty-two eclamptic cases occurred in primiparæ, over 21 per cent. in multiparæ; fifteen out of the entire fifty-three died.

Dr. Lantos thinks that the rate of mortality is increased when instruments are used, and as the convulsions often do not cease after delivery, he thinks that the forceps should not be used unless there be strong indications. Convalescence is much prolonged after eclampsia. In twenty-three of the eclampsia cases the urine was examined; in twenty-one it was albuminous, casts being found in four. At the necropsies of fatal cases of convulsion, Dr. Lantos found constant changes in the brain, but only once acute, though frequently chronic, renal changes. Like Osthoff, he traces puerperal eclampsia to violent reflex vasomotor disturbance, and classes it as acute peripheral epilepsy. The original monograph, well worth the attention of obstetricians, is to be found in the *Archiv für Gynäkologie*, vol. xxxii, part 3.—*Brit. Med. Journal.*

The Influence of Alkalies on Hepatic Glycogenesis.—E. Dufour, of Lyons (*Bull. de la Société de Biologie*, March 15th, 1890; *Le Progrès Méd.*, 1890, p. 231).—Dufour has sought to determine the influence of alkalies on hepatic glycogenesis. He selected two dogs of similar breed, weight, size, and age, kept them fasting four days, then fed them on an equal quantity of minced meat for a week to a fortnight, one of them receiving in addition 2 to 5 grammes (daily ?) of bicarbonate of soda. They were then killed by dividing the medulla, and the quantity of sugar and glycogen in their bodies estimated. He found that the quantity of glycogen was greater in the animal which had received the doses of alkali, and confirmed this by experiments on twelve dogs and two groups of five guinea-pigs.

Albuminuria as a Result of the Morphia Habit.—At the meeting of the Société Médicale des Hôpitaux on May 9th, Dr. Huchard pointed out (*L'Union Méd.*, No. 58) that the abuse of morphia sometimes causes albuminuria, which leads to death by uræmia. Levinstein has published seven such cases, and Dr. Huchard contributed three others, all fatal from uræmia. As to the connection between the renal disease and morphinism, Dr. Huchard suggested that it might be through the action of the poison on the medulla, or by long-continued diminution of arterial tension; for he has found that morphine lowers arterial tension considerably, thus favouring passive congestion in the organs, the kidney among others. According to him, whereas excessive arterial tension will ultimately bring about arterio-sclerosis, a persistent lowering of tension can lead to Bright's disease. (Obviously Dr. Huchard does not here speak of granular kidney, which is associated with high arterial tension.) In conclusion, he pointed out that morphiomania, a cerebral condition, required different management from morphinism.—*The Lancet.*

Pathogeny of Diabetes.—Bouchard has stated that there are no fewer than twenty-seven theories of the cause of diabetes. None are entirely satisfactory. The most important fact discovered in recent years is that diabetes follows extirpation of the pancreas in animals (v. Mering and Minkowski); and numerous clinical observers have since then noted pancreatic disease in conjunction with glycosuria. V. Mering and Minkowski, with most praiseworthy scientific reserve, have abstained from formulating any theory to explain the undoubted fact they have put on record; and Lépine *(Rev. Scientifique*, February 28th, 1891) has discovered an additional fact in relation to pancreatic extirpation and diabetes, which must be taken into account when the true explanation of these phenomena is forthcoming. Healthy blood possesses what he terms glycolytic powers. Fresh blood contains a certain percentage of sugar. If the same blood be allowed to stand at the body temperature for an hour before it is examined, a very considerable portion (20 to 40 per cent.) of this sugar has disappeared. This number (20 to 40) may be taken as the glycolytic power of healthy blood. It is considered that this sugar-destroying power is due to a ferment present in the corpuscles, but especially in the white corpuscles, as the glycolytic power of the chyle is as great as that of the blood, and the portions of the blood richest in leucocytes are richest in the ferment, which may be dissolved out from them by salt solution. In cases of diabetes the glycolytic power of the blood falls to 5, 2, or even 1. In animals without a pancreas there is a similar drop. The pancreas thus appears to be the chief source of the ferment. Lépine believes that the activity of a pancreatic cell is bipolar; by its internal extremity it pours the pancreatic juice into the ducts of the organ, and by its basal extremity it pours into the venous blood and lymph the glycolytic ferment. The absence or diminution of the sugar-destroying power of the blood dependent on pancreatic extirpation or disease is thus a factor, and perhaps an important one, in the causation of an over-abundance of sugar in the blood, and will certainly have to be reckoned with before the true pathogeny of diabetes is understood.

SURGERY.

BY WILLIAM F. HASLAM, F.R.C.S.

Tuberculous Disease of the Tarsus.—Joseph Ransohoff, M.D., F.R.C.S. (*Medical News*, Nov. 29, 1890.—Dr. Ransohoff brings the subject forward (1) Because in no other portion of the skeleton, with the possible exception of the wrist, is disease so liable to spread from part to part; assuming a progressive type and generally terminating only after a number of years with partial or complete loss of the affected part. (2) Because in tarsal disease the influence of age on the progress and termination of tuberculosis of bone finds an excellent illustration. (3) Because in disease of no other part of the skeleton are the questions of how and when to operate, if operation be at all desirable, more difficult to answer. Amputation is never deemed necessary in children, as the disease shews more tendency to localization in them than in adults; in the former curetting or the informal excision of diseased parts yields good results, but not so in the latter. For cases of adult tarsal disease the following measures are suggested:—1st, Scraping away the tuberculous infiltration, or *évidement* of the carious bone. 2nd, The more or less formal excision of one or more of the bones of the tarsus; and 3rd, To amputation. Dr. Ransohoff considers that the operation of scraping is dangerous from the possibility of its causing a dissemination of the tuberculous matter, and he favours early and formal excision. As to the method of operating, he is an advocate for a free incision over the dorsum with division and subsequent suture of the extensor tendons, as the lateral or bilateral incisions, though they save the tendons, afford but a poor opportunity to inspect the field of disease. Amputation should be resorted to oftener and earlier than has usually been done, as there is a limit to the usefulness of conservatism in advanced disease of the tarsus of adults, and the preservation of a deformed foot is hardly worth the sacrifice of three or four years of active life.

A case of Compound Dislocation of the Hip, with recovery.—John W. Perkins, M D. *(Boston Medical and Surgical Journal*, October 16th, 1890.)—The patient, a girl aged 8, fell on her stomach so that her body rested obliquely on the edge of the kerb, her knees being in the gutter. While in this position the wheel of a waggon passed between her legs and across the back of her left thigh. On examination, her left thigh was found flexed, abducted, and rotated outwards so as to lie perfectly flat along its outer aspect upon the table. A widely gaping wound, some eight inches in length, extended diagonally across Poupart's ligament from a point an inch above and inside the anterior superior spine to the inner and posterior aspect of the thigh. The adductors contracting, formed a well marked swelling about midway down the thigh. The muscles directly under the wound were severed—the adductor longus completely, the pectineus, psoas, and gracilis partially. The head of the femur, with the whole of the round ligament, presented near the middle of and close to Poupart's ligament. The lower portion of the abdominal muscles, nearly the whole length of Poupart's ligament, and the unsevered muscles of the thigh for a considerable extent, were exposed by the retracted skin. Hæmorrhage was considerable. The femoral vessels could not be seen or felt in the wound. Reduction was easily effected under an anæsthetic by flexing the hip and making direct pressure on the head. The femoral artery and vein, which had been held down outside and beneath the cervix femoris, were now found in their normal position, exposed by the laceration of the sheath. The rent in the capsule was anterior. The wound suppurated and there were two attacks of hæmorrhage, but in due course the wound healed. Her condition eighteen months after the injury was as follows:—The left hip was absolutely anchylosed; the thigh was slightly abducted, somewhat rotated outwards and flexed on the body. Lordosis was marked when the leg was brought parallel with the table. The pelvis was not tilted. There was no difference in the length of the two legs. Eversion of the left leg was marked. The child walked easily; there was no pain or tenderness about the joint. Dr. Perkins, in commenting on this case and on the records of similar ones, draws attention to the frequency with which they are complicated by hæmorrhage, and the importance of noting the relation of the head of the bone to the vessels, so that they may not be lacerated during reduction.

Three cases of Compound Depressed Fracture of the Skull, in which the bones were replaced after being temporarily removed.—Under the care of Mr. Thomas Jones (*Medical Chronicle*, December, 1890).—In these cases the bones after removal were placed in warm carbolic solution (1 in 30), and after all hæmorrhage had been arrested, cut into small fragments and placed on the dura mater. No drainage tubes were used in either of the cases. The result in each was good, the gap being completely filled by bone. Mr. Jones draws attention to the importance of securing primary union in these cases, as suppuration, if at all free, will destroy the vitality of the fragments. He suggests that it is desirable to return rather less bone than has been removed, so as not to cause any tension. The possibility of the fragments producing a redundancy of bone leading to symptoms is pointed out.

Rupture of the joint capsule and extensive contusions as contra-indication to immediate suturing of fracture of the patella.—George Ryerson Fowler, M.D., Brooklyn (*Annals of Surgery,* January, 1891.)—In the *Annals of Surgery* for June, 1887, Dr. Fowler writes as follows:—"The operation in the hands of skilled and thoroughly competent surgeons is destined to become shorn of all its dangers, both imaginary and real, as an immediate method of treatment; it will, without doubt, in the not very far future, supplant the uncertain and tedious means at the disposal of our forefathers, and in vogue, to a great extent, at the present day." It is with the view of modifying to some extent the views therein expressed that he has brought the matter forward again, further experience in the treatment of fracture of this bone having served to convince him that arthrotomy and suture as an immediate method of treatment, in some cases at least, is fraught with considerable peril, both to the life and limb of the patient. After giving details of thirteen cases treated by suture the following points are noted;—1. The persistency with which the cases which had been exposed to great violence developed infectious inflammatory complications. 2. The striking fact that in these cases the primary points of infection reached rather to the deep muscular structure of the thigh than to the knee-joint itself, and this latter only became infected subsequently. 3. The immunity of the structures of the thigh from infection when these were uninjured, even in the case in which direct infection of the joint itself occurred, and suppuration of the latter followed. 4. The fact that where excessive traumatism and infection were both absent a remarkably rapid cure followed, with a perfectly useful limb. 5. The perfectly safe course which those cases pursued which were sutured as a secondary method of treatment. 6. The fact that in all of the cases in which no distension of the joint cavity occurred, as well as those in which the effusion having taken place, the application of a firm elastic or other bandage resulted in the rapid disappearance of the effusion, prompt and decided infection with resulting abscess of the thigh followed in spite of every care. 7. The immunity from septic complication in those cases in which no amount of bandaging that could be borne by the patient sufficed to prevent the occurrence of effusion within the joint, or, the effusion having occurred, led to its diminution.

Dr. Fowler points out that in many cases of fracture of the patella there is a rupture of the upper part of the capsule, permitting the escape of blood and synovia under the muscles of the thigh, and that in these cases suppuration is very likely to occur in spite of every care to prevent it. This, together with extensive bruising of parts, he regards as contra-indicating immediate suture. He suggests that if suturing is done it should be after at least a fortnight's rest.

On the Relations of the Epiphysis to Osteo-myelitis.—Arthur Neve, F.R.C.S.E. (*Edinburgh Medical Journal*, January, 1891.) Mr. Neve considers the structure of the epiphysial region at three periods.

1. When the shaft is ossifying, but before the epiphysial nucleus has appeared, this period being clinically characterised by (*a*) a multiple syphilitic lesion of the end of the diaphysis—(*b*) a pyæmic arthritis of acute form connected with the neighbouring bone.

2. The second period extends to the twentieth year, or in the tibia and fibula to the twenty-fourth year. Functional activity is at its height. Cellular proliferation and calcification is proceeding on both sides of the thin cartilaginous disc, which we may now term the epiphysial line or cartilage of conjunction. This period is clinically characterised by (*a*) overgrowth of the cartilage, as in acute rickets; (*b*) hypertrophy of the bone, due to abnormal formative activity; (*c*) separation of the cartilage from the diaphysis, either traumatic or as the result of (*d*) acute osteo-myelitis, which may lead to total necrosis of the diaphysis; (*e*) caries, or necrosis of the epiphysis proper, acute epiphysial abscess, etc.

3. In the third period all special functional activity has ceased, and the cartilaginous disc has given place to bone.

Mr. Neve concludes his paper by the following summary:—

1. The chief starting-point and focus of osteo-myelitis is on the diaphysial side of the epiphysial line.

2. This is apt to implicate all the medullary elements of the bone and periosteum.

3. As a primary local affection it may be distinguished as juxta-epiphysial osteo-myelitis.

4. The term epiphysitis should be reserved for inflammation in the osseous tissue of the epiphysis.

5. The cartilage of the epiphysis is not the seat of a primary lesion.

6. Epiphysitis may occur simultaneously with juxta-epiphysial osteo-myelitis, or, secondarily to it, by contiguity or perforation of the cartilage, and *vice versa* may give rise to it.

7. Acute arthritis is frequent in infants as the result of juxta-epiphysial disease, and in them complete necrosis of the shaft is less common.

8. At a later age necrosis is more common than acute arthritis from this cause.

9. Conservative surgery should preserve the epiphysial cartilage with as much care as it bestows on the periosteum.

10. But the disc of one end of a bone does not appear essential to its symmetrical growth.

Transplantation of tissue from lower animals to man.—A. M. Phelps, M.D., New York (*Medical Record*, Feb. 21, 1891).—Dr. Phelps records an interesting case of bone transplantation from a dog to the leg of a boy, and though unfortunately the operation did not ultimately prove a success he considers that "it establishes the principle that it is possible to grow large masses of tissue from an animal to man, and to establish the circulation until the union takes place between opposite species without danger to either. It also demonstrates that a growth of new bone takes place when a section of bone is transplanted and its nutrition maintained by the artery of the animal." The patient was suffering from an ununited fracture of the lower third of the leg, the result of an operation to remedy an anterior curvature of the tibia, which had existed and had slowly increased from early childhood, until he was compelled to go upon crutches. All attempts to promote union had failed. A dog two years old was procured and thoroughly cleansed with soap and water and then washed with a solution of bichloride of mercury. While the patient was being anæsthetised and the ends of the bones, which were dense and eburnated, removed, the dog was etherised and then enveloped in a thick layer of absorbent cotton wool to the thickness of several inches, while placed in a sitting posture. Over this a few turns of plaster of Paris bandage kept the dressings in position, the right foreleg of the animal protruded through the dressings. This was shaved, cleaned, and the elbow excised, the extremity near the paw was then amputated, leaving a piece of bone one inch in length attached to a branch of the brachial artery among the soft parts. All muscular tissue was detached from this fragment, an aluminium pin passed through its long axis in the medullary canal, the piece of bone was then placed between the ends of the boy's bone and the bones pushed together so that the ends of the pins entered the bones of the patient above and below, and a silver wire passed around the entire graft. The wound in the boy's leg was then carefully sutured, and the limb fixed by a metal and plaster splint. The patient and dog remained united for eleven days, by which time, owing to the shrinkage of the dog in the dressings, so much movement was permitted that it was evident that before long the graft would be pulled out. Their separation was therefore effected. Union of the wound was complete eight days after the operation; but by the end of five weeks it was discovered that the bone shewed no further sign of uniting, and it was removed. The bone graft was irregularly covered with a new growth of bone, shewing that an effort had been made to unite the fracture.

REPORTS OF SOCIETIES.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

PATHOLOGICAL AND CLINICAL SECTION.

Meeting held April 24, 1891, Mr. **Priestley Smith**, M.R.C.S., in the Chair.

Cerebral Abscess localised by focal symptoms; Trephining; Recovery. Intercurrent Hæmaturia.—Mr. E. N. Nason, of Nuneaton, shewed a living case. A boy aged 18 fell on the pavement on Jan. 8th, and in doing so struck the back of his head. He did not look upon the blow as a severe one but suffered from headaches from that date. He had a rigor on Jan. 23rd, and from that day gave up work. He was first seen on Feb. 3rd and had then a temperature of 103·4°, was extremely ill, with symptoms much resembling those of typhoid in the second week. On Feb. 5th and 6th his temperature rose to 104 and pulse dropped to 56 per minute and he become apathetic. On Feb. 7th the left side of face and left arm became paralysed and tactile sensation was lost over the paralysed area. There was increasing hebetude but no unconsciousness. There was double optic neuritis, more marked on the right side. On Feb. 8th the temperature came down to 99·4° but with no improvement of general symptoms. On Feb. 9th patient had a rigor and subsequently a convulsive seizure beginning in the left side of the face. On Feb. 10th patient was trephined over the lowest third of the fissure of Rolando, and an abscess situated beneath the cortex of the lower end of the ascending frontal convolution was opened. After the operation the surface temperature on the left side fell considerably, and much pain was felt in the muscles of the shoulder. After this improvement was rapid, power returning in the various groups of paralysed muscles in the following order—shoulder, upper arm, forearm, wrist, and hand; the thumb muscles being the last to recover. Recovery was preceded by pain. On Feb 22nd, when apparently quite well, patient began to pass porter-coloured urine which was found to be charged with blood and micrococci. This condition gradually passed off and the urine was normal by Feb. 26th. Since then the patient has made an uninterrupted recovery and has now gone back to work.

Cancer of Rectum; Iliac Colotomy; Abnormal Colon; Death from collapse nineteen days after operation.—Post mortem examination—A loop of small intestine found adherent to line of union between colon and parietal peritoneum causing partial obstruction. Specimen shewing result of method of suturing and fixing the end of lower segment of colon. Mr. F. Marsh shewed the specimen from, and related the history of this case. The patient, a man æt. 60, was admitted into the Queen's Hospital, Birmingham, on Feb. 11th, 1891, with carcinoma of the lower three inches of the rectum, of at least eighteen months' duration. The growth completely surrounded the bowel, was adherent anteriorly to the prostate, involved the anal margin, and was of a board-like hardness. The index finger was with difficulty passed through it, but apparently healthy bowel could be felt beyond. Pain rather than obstruction was the symptom requiring relief. Iliac colotomy (modified Madelung) was performed on Feb. 19th, as a preliminary to proctectomy if the patient's subsequent condition permitted of it. On opening the peritoneal cavity by the usual iliac incision coils of small intestine presented. The colon was not in its normal situation, and it was only after considerable search that it was found to the right of the middle line and brought across to the abdominal opening. Fortunately the colon was long enough to admit of the complete section of the bowel, the infolding and suturing of the opening in the lower segment and its approximation and fixation to the parietal peritoneum below the lower angle of the wound, and finally the suturing of the opening in the upper segment to the edges of the wound. The patient did well, and the wound healed by first intention, but on the tenth day he had a little troublesome vomiting, which recurred once or twice subsequently. He was up in the ward at the end of a fortnight. On the seventeenth day he made an extra and hearty meal of plum cake, conveyed to him by his friends, and a few hours later epigastric pain and vomiting occurred, and he became partially collapsed, with irregular cardiac action. Although the pain and vomiting ceased in a few hours, he never thoroughly rallied, and died on the nineteenth day after the colotomy, March 10th. His bowels had acted fairly regularly throughout.

Post mortem examination.—The descending colon was found to cross over the top of the left kidney to the middle line, and to pass down into the pelvis inclining a little to the right. A loop of small intestine (ileum) was found adherent to the edge of the peritoneal wound, causing partial obstruction, chiefly by preventing peristalsis. The stomach and intestine above this adhesion were distended, below it the intestine was almost empty. The carcinoma was limited to the lower three inches of the rectum; it partially involved the prostate, but there was no lymphatic or visceral implication. A microscopical examination, kindly made by Dr. Crooke, Pathologist to the Hospital, shewed it was of the adenoid form with a large amount of fibrous tissue.

The specimen demonstrated the excellent result obtained by this method of performing colotomy, the opening into the lower segment being firmly occluded and attached to the abdominal parietes.

The interesting points in the case are—The abnormal colon rendering the iliac operation difficult and a lumbar one impracticable. The adhesion of the loop of intestine to the edge of the peritoneal wound, thereby practically causing the death of the patient. Although this complication has been observed in abdominal operations where a raw surface like the stump of a pedicle is present, the operator has never seen it mentioned in connection with colotomy, nor had its possibility occurred to him. The long period of growth (definitely eighteen months) without any lymphatic affection or generalisation. The confirmation of the view that carcinomatous growths originating in the rectum are always adenoid, though the clinical features may be those of scirrhus.

Mr. Bennett May shewed an Instrument which had been devised by Dr. Lambotte, of Brussels, for separately collecting the urine of the two kidneys.

Dr. Simon shewed (1) Hydatid of Liver after operation, and (2) a specimen of Ruptured Aortic Valve.

Dr. Crooke shewed (1) Colloid Carcinoma of Rectum, and (2) an Adeno-Carcinoma from the Supra-scapular region.

Mr. Martin shewed for Mr. Lawson Tait a specimen of Calculus removed by supra-pubic operation from a man aged 61 years. The stone weighed two ounces, and neither rectum nor bladder were distended before operation.

MIDLAND MEDICAL SOCIETY.

Wednesday April 1st, 1891.

M. A. MESSITER, M.R.C.S., President, in the chair.

Case of Aphemia of nine months' duration cured by Hypnotism.—Dr. Stacey Wilson shewed this patient again. When before the Society some weeks ago he was quite unable to speak, now he was able to do so without difficulty.

Specimens.—Mr. Messiter shewed—

1. A Typical Oxalate of Lime Calculus successfully removed.
2. A specimen of Compound Fracture and Dislocation of Vertebra. The injury had been cut down upon and several of the processes of the vertebra removed, but the fragments were firmly locked and could not be reduced. The patient lived for over a week after the operation.

Mr. Christopher Martin shewed a Sarcoma of the Ovary.

Double Abductor Paralysis of the Larynx.—Mr. Barling shewed a case of double abductor paralysis of the larynx in a girl of 20, apparently a hysterical condition grafted on to a slight catarrhal laryngitis. The respirations had been as rapid as 50, and nearly a year ago tracheotomy was performed for very severe dyspnœa occurring at night. With Faradism and tonics there was subsequent recovery of the abductor function, but this failed again later and at the present time the patient is nearly as bad as ever. The present treatment is by tonics, Faradism to the neck and occasional intubation, slow improvement resulting.

Hydatidiform Mole.—Mr. J. Round shewed this specimen which consisted of an ovum about two months old with a hydatidiform mole attached. The patient from whom the specimen was taken was a primipara who had been under treatment for anæmia, which had existed during nearly the whole of her married life. After the mole was removed the patient had no bad symptom except a most fœtid discharge which yielded readily to injections with a solution of Condy's fluid.

Paper.—Dr. Short read a paper on the Action of Urethan, Sulphonal, and Paraldehyde clinically illustrated.

REVIEWS.

THE PROCLIVITY OF WOMEN TO CANCEROUS DISEASES.*

This interesting little brochure has its chief motive in a desire to combat the popular idea of the heredity of cancer, and to endeavour to explain the immense preponderance of cancer in women over men. There can of course be no doubt at all that the latter reason exists in the peculiar arrangements of two special organs in women, and their having to fulfil functions in which cell change must take place with remarkable rapidity.

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* The Proclivity of Women to Cancerous Diseases. By Herbert Snow, M.D. London : Messrs. J. and A. Churchill.

These are the breast and the uterus; and some extremely interesting statistics are given on this point. In other organs the disease seems to affect men more than women. In fact, Dr. Snow sums up a conclusion to this effect: "We thus find that *while to cancerous disease of the lips, tongue, and buccal tract generally, men are enormously more prone than women, to that of the stomach and œsophagus they also exhibit a proclivity, but one of much less degree. Below the stomach the two sexes appear, in respect of predisposition to cancer, almost exactly on a par.*" He lays great emphasis on the significant fact that when we pass into what may be termed neutral ground, that is ground not influenced by marked differences in the mode of life characterising the two sexes, both men and women seem to suffer from cancer in equal or nearly equal proportion.

His fundamental notion concerning the origin and nature of cancer is that which must be held by all who are deeply impressed with the universal influence of the law of evolution, that is that all cancer growth is "an abnormal cell proliferation due to reversion, to a return of the primitive elements of the various tissues to an original amoebiform condition, in which every single cell is to all intents and purposes a quasi-parasitic independent organism." He thinks that there must be a special liability to cancer in such parts as those "where the cell-elements normally subsist in unstable equilibrium. In other words—where these are most prone to frequent modifications and changes, either in individual growth or in relative arrangement," and the basis of illustration of this is of course the uterus where malignant growth always springs, from its lining of epithelial surface.

Dr. Snow recognises the immense influence which recent researches in the physiology and pathology of the utero-ovarian system have upon this question, as for instance the importance of the united discovery of certain well-known writers herein named to the effect that "there is no sloughing away of the endometrium *en masse*, as was supposed by Tyler Smith and John Williams; all the changes—we may almost consider them "morbid," and Lawson Tait indeed styles menstruation itself "a morbid process"—*take place in the cells.* Renovation of the structures removed subsequently ensues, in readiness for the next menstrual epoch; mainly, as it would seem, by the agency of the adenoid substructure above mentioned.*

Dr. Snow has a profound conviction to the extent that neurotic disturbance and depression of mind have a largely disposing influence over the development of cancer, a point upon which we are not in a position to follow him, because our attention has not been drawn to this question, and it clearly is one upon which evidence would be difficult to get; but it has an important bearing upon a conclusion of Dr. Snow which we share with him to the full, in the advisability of disbelief in the hereditary tendency of cancer. This popular impression is only based upon a few rather idle observations of Paget and has never been proved. Our impression is precisely that of Dr. Snow, that it is incapable of proof; and if there be anything in his belief that neurotic depression is apt to produce cancerous disease, the belief in the hereditary tendency of cancer must be a very potent factor in bringing it about. It also, as he very fairly says, warps our tendency to treat the disease by surgical methods, for if we believe in cancer as a hereditary succession we can have very little belief in its being benefited by operative proceedings. There can however be no question that in an important percentage of cases operative proceedings are not only advisable but are permanently successful in diseases which, by no known method of investigation can be differentiated from those which are persistently malignant.

That mental troubles can have a hitherto unexpected and very serious influence in producing cancer is shewn by the fact, largely made use of by Dr. Snow in his argument, that carcinoma is a disease of domestication, and is perfectly unknown amongst savage races, and is clearly on the increase amongst civilised people. It is also quite unknown amongst the brute creation till we come to the highest form of domestication amongst them —chiefly in dogs.

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* The word "denidation" (*nidus*, a nest) was aptly coined by Dr. Aveling for the process here described; its object being to procure fixation and growth of the impregnated ovum, with the development of a placenta.

The practical conclusions of his paper are well and soundly summed up in the following words:—"*Aim at removing the causes which, among us, so conspicuously impede the female sexual organs in the due performance of their allotted functions. You will then succeed in hugely diminishing the prevalence, not only of cancer, but of every other specially female complaint; and will go far to remove that reproach of chronic invalidism under which the fairer half of our community now so needlessly rests.*"

An Appendix to the pamphlet, in which is discussed the question "Is cancer hereditary?" removes, in our opinion, the question to one at least of great doubt. A very ingenious use is made by Dr. Snow of what he calls "the inverted method of using statistics," and he concludes "that the belief in heredity is derived merely from popular tradition, and is wanting in any sound basis of scientific proof. 2. That extremely practical issues are involved, and that the views now prevalent often lead to disastrous results."

The brochure is dedicated to one of the editorial staff of this Review in terms which must afford very sincere gratification.

AIDS TO SANITARY SCIENCE.*

This is the last published volume of the well-known Students' Aid Series, and is open to all the objections of its class, indeed it is probable that it is more harmful from a true educational standpoint than most of its predecessors. Leaving out the appendix it contains 210 small pages, and an endeavour has been made to boil down the information contained in the classical work of the late Dr. Parkes into this small bulk. Air, Water, Habitation, Food, including adulteration, School Hygiene, Meteorology, Infectious Diseases, etc, are all discussed in a manner which may be intelligible to some few, but which must indeed be caviare to the general.

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* **Aids to Sanitary Science. By Francis J. Allan, M.D. London: Baillière, Tindall and Cox.**

It is quite unnecessary to review a work of this kind fully, but on looking through it one cannot but be struck with the many inaccuracies in its pages. An example or two will suffice. Under the head of Mustard, p. 138, we are gravely informed that it "is adulterated with turmeric, wheat and barley, starch and linseed; clay, plaster of Paris, and cayenne are sometimes added." In the year 1891 this is indeed news.

On the previous page we are told in all gravity that "Instead of making beer from malt and hops, numerous other substances are often used by brewers, as capsicum, grains of paradise, aloes, colocynth, santonin, cocculus indicus, and picrotoxine, quassia, picric acid, and, before being retailed, water, coarse sugar (foots), finings (made from skins of fish), sulphuric acid, alum, ferrous sulphate, salt (the last three to provide 'head'), *are not infrequently added.*" We are aware that former generations were startled by Accum much in this way, but after a perusal of the Local Government Board Reports of late years we were certainly not prepared for such revelations as this.

We notice, too, many mistakes in the book, *e. g*, p. 214, a litre of hydrogen weighs 0·0896 *grains.* Every student in chemistry knows this should be grammes.

We do not believe that a book of this kind is of any service to the student, even if fairly accurate, though it may occasionally be useful to the sanitarian for handy reference if annotated and corrected.

THE ACTION OF WATER ON LEAD.*

In this little book the author has made many enquiries into the cause and mode of action of various kinds of water on lead.

More than half the book is taken up in detailing forty-eight experiments made on the action of distilled water on lead piping; while short chapters follow giving particulars of other experiments made with ice water, rain water, Mirfield water, Okehampton water, and New River Water. The experiments consisted of soaking lead piping in given quantities of water under various conditions of acidity and alkalinity, etc., and at various temperatures, and the results obtained may be summarised as follows:—

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* The Action of Water on Lead. By J. H. Garrett, M.D., etc. London: H. K. Lewis.

The action of water on lead is an oxidising action. Minute quantities of nitrate aid materially in setting up the action, while the presence of chlorides aids this oxidising action. Waters acid in reaction act more strongly than those which do not contain free acid. The action increases with the temperature up to about 120° F., but at temperatures approaching boiling point the action is prevented.

These waters (notably in Yorkshire), which are apt to produce lead poisoning, are always acid, probably from the presence of nitric acid, and not from vegetable acid (ulmic or humic) as has been suggested; and the action on lead may be prevented by removing the acidity by carbonate of lime, preferably in the streams before the water reaches the storage reservoirs, or by mixing these waters, when possible, with other hard stream water.

In conclusion, the author suggests the addition of a small quantity of white powder (sulphate of barium preferred) to waters about to be tested with sulphuretted hydrogen for lead, as the delicacy of the test is largely increased, the slightest darkening of the upper layer of precipitate being very marked when seen against the white barium sulphate.

We cannot say that the author has added very much to our stock of knowledge on this subject; but he has confirmed much that was generally believed, and the book is well worth the perusal of all those interested in this important branch of hygiene.

NOTES ON THE EXAMINATION OF THE SPUTUM, VOMIT, FÆCES, AND URINE.*

THE plan and purpose of this little book are excellent, and the arrangement of type and headings makes it very clear and easy to follow. We are also very pleased with the section on the sputum; and though the method of detecting free hydrochloric acid in the vomit is not up to date, both this and the section on the fæces contain much that is useful to the clinical student, and little with which we can find fault. We are sorry we cannot speak as favourably of the section on the urine, which is disfigured by several blunders of a gross kind that could have been easily avoided by care in consulting a good book of reference. For example, in speaking of "globulin" the *serum albumen* is said to be precipitated by magnesium sulphate, and the globulin afterwards thrown down by CO_2. Under "Acetone" we are told that this substance, or "rather aceto-acetic acid," may be "detected" by giving a red colour with ferric chloride. As there are several well-known tests for acetone, it is to be regretted that one at least was not given, such as that with nitro-prusside of sodium and ammonia, for example. But why should aceto-acetic acid be confused in this way with acetone? and is it not misleading to omit to state that the ferric chloride reaction is by itself no indication of the presence of aceto-acetic acid, as it occurs with many other substances? It is curious to find Dr. Coupland describing urea estimation with the apparatus of Russell and West, which has been long ago superseded by more convenient appliances. Is he justified in regarding guaiacum and ozonic ether as good a test for hæmoglobin or blood in the urine? The presence of iodide of potassium is a much more complete source of fallacy than he appears to think, at any rate when large doses are being taken; but above all, this test fails to detect small traces of blood or blood colouring matter, and is decidedly inferior to the microscope and spectroscope.

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* Notes on the Examination of the Sputum, Vomit, Fæces, and Urine. By Sidney Coupland, M.D., F.R.C.P. London: H. K. Lewis. 1891.

THE ELEMENTS OF OPHTHALMIC THERAPEUTICS.*

THIS volume contains the first series of lectures delivered at the Birmingham Eye Hospital under the foundation bestowed by the late Mr. Richard Middlemore. Mr. Middlemore's aim in establishing these lectures in connection with the Eye Hospital was undoubtedly to diffuse a knowledge of ophthalmic pathology and therapeutics amongst that part of the profession engaged in general practice. Bearing this in mind, the lecturer has devoted himself to those parts of his subject which are capable of being taught in a short course of lectures and applied without that manual dexterity which can only be acquired by practice, and which constitutes the rational basis of specialism.

The first lecture deals with the use of mydriatics and myotics, of astringents, stimulants, irritants, caustics, and antiseptics; their use in eye diseases, and the rules for their employment. The second lecture discusses heat and cold, blood-letting, and counter-irritation; while the last lecture deals with the various internal remedies. We strongly recommend the study of these lectures to everyone commencing general practice.

RESEARCHES ON MICRO-ORGANISMS.†

THIS book is a curious mixture, in most parts praiseworthy, in others absurd. As the title implies, the author's own observations are here embodied, but the bulk of the pages are compilations from the work of others on Bacteriological apparatus; the classification, distribution and biology of microbes; ptomaines and allied substances; immunity and vaccination, and, unfortunately, on the destruction of microbes in certain infectious diseases.

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* The Elements of Ophthalmic Therapeutics By D. C. Lloyd-Owen, F.R.C.S.I. Birmingham: Cornish Bros. 1890.

† Researches on Micro-Organisms. By A. B. Griffiths, Ph.D., F.R.S.E., etc. London: Baillière, Tindall and Cox.

The early chapters contain in a very concise form much the same material as found in Crookshank's "Bacteriology" and similar works, and we have in addition a not inconsiderable amount of space devoted to Pathological Chemistry. These do not call for any comment further than this, that they are well done, and the author is evidently familiar with his subject.

It is in the chapters on Germicides and the destruction of Microbes in certain infectious diseases that Mr. Griffiths comes to grief, and this simply because he has dabbled in clinical matters of which he is ignorant. If in a future edition these parts should be excised, we could welcome his book as in many ways a useful manual.

NURSING AND HYGIENE.*

UNDER this compound title a great deal of very useful information has been brought together. Though there are some details which might be considered out of place in a book intended for the instruction of nurses (who are not medical practitioners) yet, it does not offend in this way to the extent that some other manuals do. This little work should be read after, or simultaneously with, attendance on elementary instruction in Anatomy and Physiology; without this the probationer would not be able to get an intelligent grasp of the information presented to her. The chapters on "ventilation," "food and drink," and especially that on "observation of the sick" are capital, and given a woman with aptitude for nursing, properly trained and stored with the information here presented to her, we have the best type of nurse, valuable alike to patient and doctor.

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* Nursing and Hygiene. By R. Lawton Roberts, M.D. London: H. K. Lewis.

THE COMPARATIVE CLIMATOLOGY OF LONDON AND CHIEF ENGLISH HEALTH RESORTS.*

THESE papers appeared originally in the *Lancet*; they are now reprinted with a map. The author's object is to present a series of authentic statistics, covering an equal period of time and therefore comparable among themselves. He does not attempt to draw any conclusions, and shews the difficulty of doing so. He appears to think that the variations between various parts of such a small country as England are too small to have any great significance. His figures appear to shew that the places with the highest mean winter temperature have also the highest rainfall. He omits the figures respecting sunshine as not trustworthy. The essay is well meant, but not of much practical use in its present shape.

REPORTS FROM THE LABORATORY OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.†

THIS is the third volume of these reports and quite equals those that have gone before it. It contains thirteen papers, all of a highly scientific nature, including work done by well-known investigators like Nöel Paton, Berry Hart, Woodhead, and Stockman. We regret that there is no general report on the work of the laboratory such as has appeared in earlier volumes. This laboratory is open to all members of the profession and it would be interesting to learn how far they avail themselves of this privilege.

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* The Comparative Climatology of London and Chief English Health Resorts. By Bertram Thompson, M.R.C.S., L.R.C.P. Lond. London: H. K. Lewis. 1891.

† Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by J. Batty Tuke, M.D., and D. Nöel Paton, M.D. Vol. iii. Edinburgh and London: Young J. Pentland. 1891.

ELEMENTS OF PRACTICAL MEDICINE.*

We have much pleasure in congratulating Dr. Carter on the appearance of the sixth edition of his popular little book. In the present volume he has called in the aid of Dr. Crooke and Mr. Malcolm Morris for the sections of General Pathology and Diseases of the Skin, while the whole has been revised. Although the work is by no means an adequate presentation of the present state of medical knowledge, it unquestionably meets a widely-felt want, and we wish this edition a success equal to that of its predecessors.

NEW INVENTIONS, DRUGS, ETC.

Bovinine.—This is a fluid meat prepared by the J. P. Bush Manufacturing Co. in America. It is a pleasant smelling, agreeable dark-coloured liquid, tasting slightly sweet. It contains no peptone, so far as we could determine, but a certain proportion of albuminous matter. Submitted to analysis we got the following results:—

Sp. gr.	1·0463 at 15° C.
Total solid matter ...	20·0 per cent. by weight.
Moisture and glycerine	80·0 ,, ,,
	100·0
Mineral matter ...	1·0 per cent.
Albuminoids ...	12·0 ,,

It appears to be an albuminous fluid such as defibrinated blood preserved by the addition of boroglyceride, as it contains boric acid and glycerine. It is antiseptic and easily assimilated food which may be found useful in cases when assimilation is very difficult and digestion much interfered with by processes of decomposition, as in dilated stomach, gastric catarrh, etc.

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* Elements of Practical Medicine. By Alfred H. Carter, M.D. Lond. Sixth Edition. London: H. K. Lewis.

Miscellany.

A DUBLIN DOCTOR'S DOGGERELS.

THIS is a little book of rhymes, originally printed for private circulation. and now, as the author says, "saved from the waste paper basket." It would have been a great pity if they had been consigned to that ignominious receptacle, for they are irresistably funny and marked by much cleverness, both of idea and of expression. The medical poems, or rather we should call them skits, are especially amusing. Here is a specimen :—

Should you suffer from lumbago,
Live on nothing else but sago,
Rub the lower part of spine
With the strongest turpentine,
Try the treatment used by quacks,
Drop on melting sealing wax.
If there still is no relief
Try a six-inch mustard leaf,
Take a needle and a syringe
Inject ether every twinge,
If there's no relief from pain
Try a Pulvermacher's chain.
Then rub smartly with sand paper,
It will make you dance and caper,
Then, while resting from your toil,
Smear the part with "Jacob's Oil."
If all fail, try belladonna,
It will cure you, 'pon my honour.

Here is another :—

Doctors wonder, and well they may,
How the profession can possibly pay,
Hundreds still will crowd the ranks,
Giving advice without fees or thanks,
Too many hospitals, far too many,
Giving their help without charging a penny,
Hundreds who could afford a fee,
Get at Dispensary treatment free.
The profession allows it, what's the use
Of alluding at all to such an abuse?
The struggling practitioners doing their duty,
While quacks and bone-setters live on the booty.

It is clear that a humourist and rhymer of the first water has been lost to the laughter-loving public in the Dublin doctor.

ADVERTISEMENTS.

The gradual development of the theory and practice of advertising will soon render necessary the formation of a chair of "Puffery" at one of our Universities. The following series of questions might well constitute the examination for aspirants to such a professorship, and some of our readers may like to enter the lists; in which case we will publish their answers and memorialize the new Teaching University of London when it becomes a corporate body.

1. Give the date of the first advertisement of Pears' soap. Mention the chief features of any six illustrated advertisements of the same.

2. Give as far as practicable the connection between Eno's fruit salt and :—(*a*) The struggle between light and darkness. (*b*) The honours of war. (*c*) The nobility of life.

3. State briefly:—(*a*) Who was saved by the use of Lamplough's pyretic saline. (*b*) Whose cod-liver oil is "as sweet as cream and practically tasteless." (*c*) What is described by the *Daily News* as "the drink of the future." (*d*) Who took Bouillon Fleet, and when. (*e*) Why does a woman look old sooner than a man. (*f*) What is a perfect treasure in the kitchen.

4. Where do the following occur?—(1) Where great patricians shall attend . . . . and in the end admire. (2) You may change the trickling stream but not the raging torrent. (3) Leaves a good impression behind. (4) She who rocks the cradle rules the world. (5) Arrests all dirt. (6) Children like it.

5. Give a complete and scientific classification of soaps, hair restorers, and public companies.

6. Finish the following quotations:—(1) "I says to Mrs. Harris, Mrs. Harris says I, use . . . ." (2) "'Tis said pain and suffering kill hope . . . ." (3) "What are the wild waves saying . . . ." (4) Call a spade a spade, and . . . ."

7. By buying what can one help "the East End toilers?" What European monarch carries a box of Beecham's Pills in his pocket, and takes a couple before meals?

8. Make a careful analysis of Sequah's prairie oil and compound a mixture exactly resembling it in physical and chemical properties.

Any reader making a perfectly correct set of answers to all these questions, and doing the practical work demanded, will receive a prize of £1,000. G. M.—*Guy's Hospital Gazette.*

New Books, etc., Received.

Notes on Surgery for Nurses. By JOSEPH BELL, M.D. Edinburgh: Oliver and Boyd.

The Physical Signs of Cardiac Disease. By Dr. STEELL. Manchester: J. E. Cornish.

Introduction to the Diseases of Infancy. By J. W. BALLANTYNE, M.D. Edinburgh: Oliver and Boyd.

Guy's Hospital Reports. Vol. 47. 1890. London: J. and A. Churchill.

⁂ Authors can have reprints of articles at the following rates:—

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THE

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OF
THE MEDICAL SCIENCES.

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JULY, 1891.

ORIGINAL COMMUNICATIONS.

THE HYPNOTIC ACTION OF URETHANE, SULPHONAL, AND PARALDEHYDE, CLINICALLY CONSIDERED.*

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DURING the early part of last year I received some of the Schedules of the Therapeutic Committee of the British Medical Association to be filled up with reports on the uses and actions of some of the newer hypnotics. The full and tabulated report of the Committee on the schedules sent in to them, which included the few I had been able to write out, published in the *B. M. J.* of July 26th, 1890, suggested to me that any further cases that I came across might be tabulated separately and form the subject of a paper, with a special view to investigating clinically the uses and administration of these drugs. The period of observation extended over about twelve months, and during that time I was able to collect reports on twenty-six cases. This number is much less than I thought it would be when I commenced, for I was under the impression that in the medical wards of the General Hospital during that time a much larger number of cases would be available for my purpose, but as a matter of fact, the cases of pure sleeplessness unaccompanied by pain, did not prove so numerous as I imagined. These twenty-six cases do not include all the cases in which hypnotics were given during that time, for there were, as one might expect, some in which less recent drugs, as chloral or potassium bromide were given without any of the newer hypnotics having been previously prescribed, and these cases have been omitted as they were not within the scope of this paper: and there were others that were not sufficiently accurately reported to justify their being placed in it. There are, however, several instructive cases in which the more recent drugs failed, and the aid of the older hypnotics, or even of an anodyne had to be called in.

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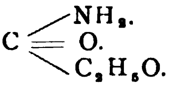
* A Paper read before the Midland Medical Society, April 1st, 1891.

My thanks are due to the Physicians of the General Hospital for their kindness in allowing me to refer to their cases in the wards for the material from which this paper has been constructed.

I have specimens of the three drugs before me, and will pass them round while I give a brief description of each.

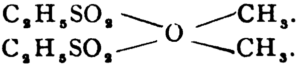
Urethane or ethyl carbamate has a formula of $C_3H_7NO_2$.



$$C \begin{array}{l} \diagup NH_2. \\ = O. \\ \diagdown C_2H_5O. \end{array}$$

It is a solid in white crystals and very soluble in water, with a slight taste something like nitre, and no smell. Impure specimens sometimes have a mousey smell, said to be due to acetamide, a bye-product in the manufacture.

Sulphonal, or diethyl-sulphon-dimethyl-methane, has a formula of $C_6H_{16}S_2O_5$.



$$\begin{array}{l} C_2H_5SO_2 \diagdown \\ C_2H_5SO_2 \diagup \end{array} O \begin{array}{l} \diagup CH_3. \\ \diagdown CH_3. \end{array}$$

It is a crystalline powder without taste or smell, only very slightly soluble in cold water, 1 in 450 at 60°F., but it is more easily soluble in hot water, in the proportion of 1 to 20.

Paraldehyde is a polymer or polymeric modification of ordinary aldehyde, and has a formula of $C_6H_{12}O_3$

$(CH_3COH)_3$

I may mention here that chloral may be taken as an aldehyde, the H_3 being replaced by Cl_3, thus:—CCl_3 COH.

Paraldehyde is a colourless liquid at the ordinary temperature, with a taste and smell like aldehyde—that is, with a pungent taste and æthereal smell. It is soluble in water in the proportion of ʒi. to ℥i. It is important to remember these physical properties in prescribing. In the case of urethane there is no difficulty; it can be given in water simply, and needs no second ingredient to disguise any disagreeable property. Sulphonal is usually given suspended in mucilage; there is also no smell nor taste to hide with sulphonal. The taste of paraldehyde is objectionable to some people, and can be covered to some extent by the fluid extract of liquorice. I do not remember, however, hearing that any of the patients for whom it was prescribed in hospital made any complaint about it on this account—that is, verbally—but one woman promptly vomited the draught containing ʒi. of the drug directly after it was given to her. Urethane is 2s. the ounce, sulphonal 1s. 6d. the ounce, and paraldehyde 6d. the ounce. Sulphonal and paraldehyde were amongst the additions to the B.P. in 1890.

Urethane was given alone in 5 cases, sulphonal in 11, paraldehyde in 3; two or more of the drugs were given (each on a separate occasion) in 7 cases. The plan on which the observations were made was in accordance with the schedule drawn up by the Therapeutic Committee of the British Medical Association, and under separate headings the following items were noted:—1. Name, age, and occupation of the patient. 2. Disease. 3. Duration of the insomnia. 4. Hypnotics previously tried, and their effects. 5. Dose and frequency of the hypnotic selected. 6. Results of its action—(*a*) advent of sleep, (*b*) duration of sleep, (*c*) character of sleep. 7. After effects—drowsiness, giddiness, nausea, inco-ordination of gait, rash, etc.

Urethane.—Of the five cases in which urethane alone was given, it acted satisfactorily in four.

Case 1. Aortic valvular disease in a labourer æt. 39. Insomnia four days. No drugs previously tried. Urethane gr. x., given at 9-0 p.m.; went to sleep at 11, and slept three to four hours. Good sleep; was drowsy all the next day, with slight headache.

Cases 2, 3, and 4. All cases of hepatic cirrhosis. In one the sleeplessness had lasted four days, and was due to fretting because he wanted to go home. Urethane gr. x. were given at 9-0 p.m. He went to sleep in half an hour, and slept well for seven hours. It was not necessary to repeat the dose. In the next case the man complained of an aching pain in the pit of the stomach. Gr. xv. were given one night, gr. xx. the next night, and gr. xxv. three nights after. In no case did he have good sleep, but he said he felt more comfortable, and he slept a little on and off, wandering at times in his sleep. He felt rather drowsy the next day on each occasion. In the third case of cirrhosis, that of a woman, insomnia had lasted for three weeks. Gr. xx. of urethane gave five to six hours' quiet sleep with no appreciable after effects.

Case 5. Pneumonia after the crisis. Insomnia had lasted seven days. Gr. x. gave four hours' good sleep, commencing ten minutes after the dose. The next night he had no draught, and was restless all night. The day after that, gr. x. were given again, and he slept well and also slept during the next morning. There was no need to repeat the dose. Urethane acted very satisfactorily in this case.

Sulphonal.—Of the twelve cases in which this drug was given, several shew very clearly its powerlessness to subdue pain, and its efficacy where simple insomnia alone exists.

Case 6. Insomnia for eight days in a case of plumbism. Gr. xxx. gave seven and a half hours' good sleep.

Case 7. Gr. xv. were given three times a day for eight days in a case of diabetes mellitus. He was very drowsy all the time, and fell into a deep sleep about half an hour after each dose. He complained at times of a slight headache during the eight days.

Case 8. Locomotor ataxia. Gr. x. given for three nights. The first night he had three hours' sleep from half an hour after administration, and the two succeeding nights none at all, but he was drowsy the next day in each case.

Case 9. Cancer of stomach with pain. Gr. xx. on two successive nights gave no good sleep; the second night, indeed, she was excited and very restless. Morphia had to be given after this.

Case 10. Chorea in a boy æt. 16 years. Gr. x. produced no effect the first night. Gr. xx., repeated on six successive nights, gave him good sleep all night from 9-5, with gradual cessation of movements. The choreic movements had completely ceased at the end of the week.

In Cases 11, 12, and 13, where pain was present—viz., thoracic aneurysm, pyopneumothorax, and subphrenic abscess—sulphonal, in doses of grs. x, xx., or xxx., gave no relief; but in the case of pyopneumothorax, where pain was eased after the chest had been opened, gr. xx. gave him a good night's rest, although before that it was ineffectual.

Case 14. Advanced mitral stenosis in a man æt. 33 years. Gr. xx. gave him two hours' sleep, and after that he was restless for the rest of the night.

Case 15. Insomnia had been present several days in a case of bronchitis and cardiac failure. A single dose of gr. xx. gave him six hours' sleep, and did not require to be repeated.

Case 16, in which sulphonal was given, was one of pleurisy and tubercular phthisis. Gr. xx, for two nights gave him only partially good sleep. The dose was then increased to gr. xxx., and he slept well, with slight interruptions, on both the nights on which it was given, and required no further dose. In this case the man had slept badly for two months.

Paraldehyde was given by itself in three cases only.

Case 17. Double aortic disease with secondary mitral; insomnia had been present for several weeks on and off. Paraldehyde was given in ♏ xx. doses every four hours for fourteen days. He slept better at night but not at all in the day time, and the sleep he had was broken by intervals of wakefulness.

Case 18 was one of bronchitis and emphysema, with failing heart, in a woman æt 43 years. ♏ xx. were given on following nights, and on both she slept better than she had done for three weeks. The third night the dose was omitted and she did not sleep so well as when the drug was given but better than before she had the first dose.

Case 19. Pneumonia in the convalescent stage; endocarditis. Had slept very badly for fourteen days. ♏ xx. of paraldehyde gave her a fair night, and the next day a similar dose caused her to sleep all the night.

The results in the cases in which two or more drugs were given are perhaps the most interesting of all:—

Case 20. Enteric fever; insomnia for one week. Urethane gr. xx. on following nights gave him no better night than before. The third night gr. xx. of sulphonal were given and he slept well for three hours, and also slept fairly the next two nights without any draught.

Case 21. Cardiac dyspnœa with insomnia for three to four weeks. Paraldehyde ʒ j. was given every night for six nights; he slept no better during the night, but was drowsy and slept several hours each day. For two nights gr. xx. of sulphonal were given, in each case he did not sleep till early morning but then had several hours good sleep. On the fourth day that this man had the paraldehyde he developed a rash on the lower part of the abdomen, which consisted of a bright red blush with small darker red pimples on it. The day after the second dose of sulphonal he had on the right arm an erythematous rash, arranged in rings, and the next morning in the inner sides of the legs and thighs there was a dark red rash like a dark scarlatina rash with a considerable amount of infiltration of the skin. On the fourth day after the erythematous rings on the arms appeared they assumed a mottled appearance and were fading.

Case 22. In another case of cardiac dyspnœa, where insomnia had lasted several weeks, no sleep was obtained either from K.Br. gr. x. or gr. x. of urethane. Sulphonal gr. x. gave him a little sleep only; ʒ½ of paraldehyde for ten nights gave him fairly good and quiet nights after a few days, and was discontinued after the tenth day.

Case 23. In the case of thoracic growth with only slight pain, gr. x. of urethane at 12-0 midnight and at 2-0 a.m. gave no sleep. Sulphonal gr. xxx. gave six to seven hours' sleep each night on three successive occasions, with a feeling of drowsiness the next morning.

Case 24 This case, one of chronic Bright's disease, was remarkable, since urethane had a greater effect than sulphonal. For two nights gr. x. of urethane gave her three to four hours' sleep The third night gr. xx. were given, and the sleep was not good; two hours after, gr. xx. of chloral were given, and this only gave one and a quarter hour's sleep. The next night she had ʒ ss. of sulphonal, and the next ʒ j., but she had no sleep after either.

Case 25. A case of splenic leukæmia. Urethane gr xx. gave him only a few hours' sleep each night. ʒ ss of sulphonal was then given for six nights. Each night he slept for about half the time, and would I think have slept better on some of the nights had he not been awakened several times by recurring epistaxis.

Case 26. Girl æt. 14 years. Chorea. Urethane gr. xx. gave her a few hours' sleep on and off, with no alleviation of the movements; gr. xxx. had no better effect on the two following nights. ʒ ss. of sulphonal was then given, but with only partial sleep on and off as before. The morning after the sulphonal a rash was noticed. Her face was flushed, but not swollen; on the front of the chest and over the abdomen, especially on the sides, and becoming more faintly marked towards the middle line, there was a bright red flush with small red points on the hair papillæ, so that it had the effect of being "goose fleshed" on the top of a deep blush; a similar but less well marked appearance was seen on the front of the legs and the outer surface of the upper arms. The rash, which was also present on the back of the body and legs, was modified by the redness caused by the incessant movement and rubbing against the bedclothes. There was no itching, rise of temperature, nor sore throat. The rash disappeared within the next twenty-four hours. Chloral hydrate was now substituted for the sulphonal, but had to be pushed before any marked result was produced.

Summary.— In making a summary of the conclusions that can be drawn from this series of cases, it will I think, be convenient to study them in the same order in which the observations were planned.

Age and Sex.—The extreme ages of the patients in the list were 14 and 59 years, and of the 26 cases, 20 were males and 6 females. I could not see that the age or sex affected the action of the drugs in any way.

Disease.—Here it was evident that the drugs had little effect upon cases of sleeplessness due to pain; in the case of thoracic tumour, however, where pain, but not very severe pain, was present, the patient stated that he was certainly easier after the draught containing gr. xxx. of sulphonal. On the other hand, in the case of thoracic aneurism, where again the pain was not very severe, the same drug in doses of from gr. x. – xx. had no effect whatever. Five out of the seven cases of heart disease were greatly relieved, one had a little sleep, but the seventh was was not much benefited. In the cases of bronchitis with cardiac failure, they gave good or fair nights and will probably prove to be most useful in this class of case where opium is contraindicated. In one of the cases of chorea, sulphonal in gr. xx. doses acted most satisfactorily; better I think than the same amount of chloral would have done, although of course, it is impossible to be sure of this. In the other case of chorea, neither the urethane nor sulphonal gave more than a few hours' sleep at a time. In the cases of convalescence after pneumonia and enteric fever, all three drugs proved of great service; after the first good sleep no further dose was required. It appeared as if the bad habit of not sleeping had been broken.

Advent of Sleep.—The times at which sleep ensued were so various that it is not easy to draw any definite conclusions from them. Ten minutes on the one hand, and six or seven hours on the other seemed to be the extreme limits Both urethane and paraldehyde have probably a more rapid action than sulphonal, but not in my cases to the extent usually considered, for sulphonal in ʒ ss. doses produced sleep in a few minutes on one occasion, and in fifteen minutes on as many as five occasions The action of sulphonal may be deferred for some hours; on two occasions sleep did not ensue for six or seven hours, and in several cases the sleep seemed better the night after, than on the occasion of the first dose, even when only one was given, but I do not remember any occasion on which no sleep at all was enjoyed on the night of administration, and a good or fair night the next, without a repetition of the draught.

Duration and Character of Sleep.—In the greater number of the cases where sleep was produced it was good in quality while it lasted. If the patient had been wandering or talking much in disturbed sleep for several nights before the drug was given, the sleep following the draught seemed more likely to be accompanied by occasional wandering than when the drug was given for complete absence of sleep with rational wakefulness. It seemed to me that slight wandering was more likely to occur after sulphonal than after either of the other drugs; or, to put it in another way, that after urethane and paraldehyde the patient might wake up for a few minutes and then drop off to sleep again quietly, whereas after sulphonal the wakeful intervals seemed to be replaced by wandering intervals, followed again by sleep of a sounder nature. I thought that sulphonal stupefied the patient more than paraldehyde, and certainly more than urethane; and in one case the patient, after gr. xxx. of sulphonal, seemed inclined to wander and talked nonsense before he went to sleep at all.

After Effects.—In nearly every case in which any effect was produced, drowsiness ensued the morning after the drug had been given. The feeling of drowsiness was most powerful after sulphonal, and in fact often produced good sleep during a large portion of the next day. Slight headache was produced in a fair proportion of the cases, and some amount of giddiness in a few only. Following the moderate doses prescribed, no really disagreeable consequences were experienced. In two cases skin eruptions were seen; these have already been referred to.

It is reasonable to conclude that they were actually caused by the drug. In one case rashes appeared both after paraldehyde and after sulphonal; in the other, after sulphonal.

General Effects.—I cannot point to any derangement of respiration, circulation, or appetite as a result of the drugs administered. If any alteration did occur in the respiration or circulation, it was not noticeable on the ordinary ward charts, and no symptoms occurred to suggest it. No case of cyanosis was seen after the administration of sulphonal.

I think the manner in which the chosen drug is given is important. The best results were those in the cases where sleep speedily ensued, and slight disturbances such as those unavoidable in a large ward were sufficient to prevent the approach of sleep in several instances. On every occasion, so far as it was possible, the patient was prepared both bodily and mentally for a good night's rest; the last day medicine and the last food had been given, the pillows and bedclothes rearranged, and the spit cup or other toilet requisite placed ready, so that he need not be disturbed, and he was told to remain quite still after the draught. Quietness of this nature can be more easily ensured in private than in hospital practice, and on that account the drugs have a better chance in private than under the more or less disturbing influences of a hospital ward.

In conclusion, I think that this short series of cases, although not sufficiently numerous to prove more than a few points, and subject, as all like series will be, to fallacies such as that of the *expectation of sleep on the part of the patient*, yet will tend I think to strengthen the belief that, if given in suitable cases, in urethane, sulphonal, and paraldehyde we have three most useful and valuable drugs.

POST-GRADUATE LECTURE ON THE PATHOLOGY OF TUBERCULOSIS.

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Gentlemen,

The part which I have the honour to undertake in this post-graduate course on the Pathology of Tuberculosis has so far been chiefly a practical one, consisting in demonstrations of the methods of staining the tubercle bacillus, and of the technique necessary for the histological investigation of tubercle as it comes more or less within the domain of its medical pathology. The remaining part of my task will be to give you, as far as I am able and time permits, a concise description of the varieties of tubercle as we meet with it in the internal organs, but more particularly in the lungs, where we shall also have to consider the important question of the relations of tubercle to pulmonary phthisis. I can assure you that I am quite conscious of the difficulties of this task, and I feel that I hardly dare enter upon it without first asking your indulgence for any shortcomings or imperfections that you may detect in my methods of dealing with it. If, for instance, we take the lungs by themselves, the importance of the subject of pulmonary tuberculosis is such, that the literature of it is to be measured by volumes almost innumerable, of which a cursory review alone would more than occupy the time I have at my disposal.

Had I not for reference records of about 150 *post mortems*, which I have made in cases of tuberculosis, as well as a large number of preparations illustrating the morbid anatomy and histology of a series of typical examples from them, I should feel that I had but little claim on your attention. And here I desire also to acknowledge my obligations to friends for much invaluable assistance. I am especially indebted to Dr. Sims Woodhead, the Director of the research laboratories of the Royal College of Physicians and Surgeons of London, for the loan of a series of beautiful large lung slides; to Messrs. Hall Edwards and J. H. Clayton of this city for micro-photographs and drawings made from my own specimens, all of which I hope to be able to demonstrate by means of the lantern. Without help like this I could scarcely have made my lectures sufficiently interesting and instructive.

Thirdly, I feel that my task has already been considerably lightened by the labours of my colleague, Professor Barling, who in his first lecture has so ably and so clearly laid before you all the important facts concerning the etiology and general pathology of tuberculosis, and has, so to speak, thus prepared your minds for a more intelligible grasp of the details connected with its special pathology.

In the special pathology of the disease, Professor Barling has dealt chiefly with local tuberculosis of bones, joints, the skin, the external lymph glands and the genito-urinary system, comprising cases which come under the treatment of the surgeon.

I have to deal with tuberculosis either localized to individual organs, or generalized throughout the system, and to discuss the relationship between these two forms.

We will commence with the lungs, which take the precedence of all other viscera as a favourite seat of tubercular disease. It is in them that tubercle has been studied more than in any other organ, and they constitute the battle ground of almost endless debate and discussion concerning the nature and the varieties of tubercular lesions so common in them.

The history of the study of pulmonary tuberculosis may be conveniently divided into two periods, the first of which dates from about the time of Laennec.[1]

It extends over half a century, during which pathologists based their attempts to define the nature of the disease mainly upon anatomical grounds. Then, towards the end of the period come the experimental researches of Villemin,[2] Burdon Sanderson,[3] Wilson Fox,[4] and Cohnheim[5] and his pupils, instituted with the object of determining the specific and infective nature of tubercle.

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[1] Traité du diagnostic des maladies des poumons, 1819.

About this time also the relation of micro-organisms to disease was a subject that was absorbing the attention of many scientific pathologists and experimenters.

Its influence in pathological research steadily increased, and became of such importance that it now constitutes a special department of pathology under the title of Bacteriology.

It was during the development of this comparatively new science, that Robert Koch, in 1882,[6] made known his important discovery of a bacillus as the cause of tuberculosis. With the date of its publication commences the second period in the history of the disease, which is now relegated to a place amongst the class of infective microparasitic diseases.

The idea that the virus was to be found in some special micro-organism was not a new one. Klebs and Aufrecht, some four or five years before, believed they had discovered micrococci as the cause; and Baumgarten, about the time Koch was engaged in completing his investigations, had, as the result of an independent research also found bacilli that were subsequently proved to be identical with Koch's bacillus tuberculosis.[7]

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[2] Études sur la Tuberculose, 1868.

[3] *Practitioner*, vol. xxix., contains an account of experimental investigations made in 1868-69, and a critical review of the previous researches of others, with full literary references.

[4] On the artificial production of Tubercle in the lower animals. London: Macmillan. 1868.

[5] Die Tuberculose vom Standpunkt der Infectionslehre, 1879. See also Lectures on Genl. Path., translated by McKee, Sydenham Soc. Series.

[6] Selected Essays on Bacteriology, edited by Watson Cheyne. Sydenham Society. Trans. of German Monographs on bacteriological subjects. Art. Tuberculosis. Trans. by Stanley Boyd.

[7] Centralblatt f. d. Med.Wiss 15, 1881. Aufrecht had also about this time found similar bacilli (Path. Mitth. 1881). For newest information on the histology of tubercle and the relations of the bacillus, &c., see Baumgarten's recent work. Lehrbuch der pathologischen Mycologie, 1890. Vol. ii.

Nevertheless it remained for Koch by new and improved technical methods to convert theory into facts, and to establish on a comprehensive basis of experimental evidence the doctrine of the specificity of tuberculosis as it now stands. Like all new doctrine tending to subvert old ideas it met at first with much scepticism and opposition; but it also raised hopes in the minds of many that time might confirm it,[8] and lead to an adjustment of much conflicting opinion as to the real nature of the disease, if not to a final settlement of a much vexed question on a simple but trustworthy etiological basis. Matters would indeed be simplified if we could specify as tubercle all lesions containing the bacillus. Notwithstanding the wide acceptance which Koch's views as to the etiology of the disease have gradually gained for themselves, the real point of issue, viz., how to give a definite answer to the question, "What ought to be called tubercle?" is by no means settled in the minds of pathological anatomists by the relation of the bacillus to the lesions. Virchow, for example, still defends as tenaciously as ever his definition of tubercle on a purely anatomical and histological basis.

During my recent visit to Berlin I attended frequently the *post mortems* held in the Pathological Institute at the Charité, and I found that my conception of tubercle in the lungs, from merely a naked eye inspection of it, was certainly not always in accordance with the teaching there. I saw around old caseous foci, distributed singly or in groups, the small greyish granulations, some of them shewing minute caseous yellow centres, such indeed as I had often seen in my own *post mortem* work and no doubt had described as tubercles. I was told, however, that for the great majority the term tubercle was, strictly speaking, not the correct one to apply to them. They were really and for the most part nodular fibroid thickenings of small bronchi, fibrous bronchitis and peri-bronchitis with small foci of pneumonia around them. In the light of such teaching it was evident that the use in some of our modern text books[9] of such a nomenclature as "small firm grey miliary tubercle," "large soft grey tubercle," and "yellow tubercle," involved a misapplication of the term.

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[8] These hopes have been fully realized in the investigations conducted on bacteriological lines by Baumgarten, Schottelius, Tappeiner, Weichselbaum, and other experimenters since the discovery of the bacillus.

I began to question how far I could trust my previous histological work as a sufficient criterion to enable me to decide roughly from a naked eye inspection what were tubercles. I was nevertheless consoled to learn that even those who were teaching me, with a far greater experience than mine, admitted that it was not possible in all cases to distinguish with certainty by the naked eye alone the tubercles from the non-tubercles. It seemed to me inevitable that every doubtful little nodule in the lungs must pass the closer scrutiny of the microscope before deciding whether it attained the dignity of an anatomically true tubercle. I must confess that I cannot fully appreciate the utility of such fine anatomical distinctions.

However we may distinguish tubercle, whether on an anatomical basis, by the presence of a definite structure, or on an etiological basis, by the demonstration of a specific cause in the form of the bacillus, it seems to me that the latter method is the more important from the point of view of practical therapeutics, especially prophylactic treatment. We are now on the verge of future possibilities in dealing with tubercular diseases to which, in my opinion, no amount of anatomical or histological study alone could have led us.

To the pathological anatomist the word "tubercle" suggests a particular histological picture; the term "tubercular" is a condition qualifying a lesion that at the outset may have nothing to do with tubercle according to his conception of it. To the pathological mycologist the same terms suggest something more than mere structural details; they imply the presence of the specific cause of the lesion—viz., the bacillus—a conception that has gradually been growing in favour since its discovery.

Now in the lungs we shall find that while the lesions commonly described as tubercles or tubercular, present differences in their naked eye appearances as well as in their microscopical structure, they are all alike in one respect, *i.e.*, in containing the causal factor of the disease, viz., the bacillus, the demonstration of which is regarded by many modern pathologists (Orth, Ziegler) as the only conclusive test of what is tubercle.

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[9] *e.g.*, Green's Pathology, 1889.

Let us first of all turn to the pathological anatomist's point of view, and consider briefly the development of the teaching of various schools concerning the rough anatomical characters and minute structure of tubercle in the lung. At the beginning of the present century Bayle (1810) defined as tubercle in the lungs all nodules, from the size of a hemp seed upwards, that presented an *opaque* greyish or yellowish appearance. He was quite familiar with the disseminated grey miliary form, but on account of the translucency of the nodules, hesitated to regard them as tubercles ; and in order to distinguish them from tubercles, he gave them the name of "grey granulations." Laennec, on the other hand, considered them to be the early stage of tubercle, and included them in his classification. He demonstrated, moreover, the transition of grey into yellow tubercles, and taught that all caseous masses in the lungs, irrespective of size and extent, were really tubercles, whether disseminated or conglomerate and diffuse in distribution.

As the result of investigations into morbid conditions of lung, Addison [10] was really the first to recognise in the larger yellow foci a distinct pneumonic process, to which he gave the name of scrofulous pneumonia. Tubercle, according to Addison, had its elective seat in the connective tissue septa of the alveoli, or, in other words, was always *interalveolar*.

A few years later, Virchow confirmed Addison's views as to the existence of a caseous pneumonia, apart from tubercle, and defined the important part played by this form of pneumonia in pulmonary phthisis. Tubercle, he taught, was a non-inflammatory heteroplastic growth, distinctly lymphomatous in type, which originated in the connective tissue.[11] Virchow's teaching, which is a further development of Addison's, was based upon a more complete histological research, and marks the introduction of the microscope into the systematic study of the disease. The only supposed distinctive feature founded upon microscopical investigation previous to the publication of Virchow's doctrines had been described by Lebert, who believed he had found in the caseous material certain peculiar cellular bodies which he called "tubercle corpuscles," a view now no longer held, though it was apparently supported by Beale. (*Vide* Discussion at the Path. Soc. of London on the relations of Pulmonary Phthisis and Tubercle, Path. Trans., 1873.)

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[10] Selected Works, Sydenham Soc., old series.

[11] Virchow's Onkologie. Vol. ii. The "grey granulations" of Bayle, or the small firm grey tubercles, were regarded as the only typically true tubercle in this anatomical sense.

With improvements in the construction of the microscope and its more frequent employment in pathological enquiry, we come now to the more elaborate investigations of Buhl,[12] Schüppel,[13] Wagner,[14] Langhans,[15] Hering,[16] and Friedländer,[17] in Germany; of Thaon,[18] Grancher,[19] and Cornil,[20] in France; of Klein,[21] Hamilton,[22] and Watson Cheyne,[23] in our own country. And at the same time we must include the opinions of the distinguished clinicians and pathologists who took part in the important debate on the anatomical relations of pulmonary phthisis to tubercle at the Pathological Society of London in 1873. The opinions of all these authorities represent, comparatively speaking, the modern views on the morbid anatomy, and mark a period in the study of the disease, during which the histological investigation of tubercle was worked out with singular care and minuteness of detail, at a time when the significance of special structural characters was particularly insisted upon. I shall have to refer to them pretty frequently.

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[12] Lungenentzündung Tuberculose und Schwindsucht, München, 1873. [13] Untersuchungen über Lympdrüsen-Tuberculose, Tubingen, 1871. [14] General Pathology, American Transl., 1874. [15] Virch. Archiv., 42. [16] Studien über Tuberculose, Berlin, 1873. [17] Untersuchungen über Lungenentzündung, etc., Berlin, Hirschwald, 1873. Ueber locale Tuberculose. Volkmann, Sammlung, No. 64. [18] Recherches sur L'Anat. Path. de la Tuberculose, Paris, Masson, 1873. [19] L'Union Méd., 1881. [20] Manual of Path. Histology, trans. by Alice M. Hart. [21] Part ii. of the Anatomy of the Lymphatic System, London. [22] Path. of Bronch -Pneum. and Tubercle in the Human Lung, Macmillan, 1882. Reprint of Papers in Practitioner, 1879-81. [23] Practitioner, 1883. An excellent summary of the Views of Path. Anatomists up to 1868, by Prof. Waldenburg, in his monograph, Die Tuberculose, Berlin, 1869, and in an article in the Berlin Klin. Wochenschrift, 1874, No. 25.

THE VARIETIES OF TUBERCLE OF THE LUNG.

1. The purest and most unadulterated example is that form known as *acute disseminated miliary tubercle*, and it is part of a tuberculosis widely diffused throughout the system (acute general tuberculosis). So far as the lungs themselves are concerned, it may be primary or secondary. It is secondary when a general tuberculosis originates from some old caseous lesion existing in the lungs themselves, or when it succeeds to a pulmonary tubercular phthisis.

According to the doctrine of the infectiveness of tubercle, its propagation takes place from some primary focus of tubercular disease that may be latent, and situated in some part outside the lungs. Such a focus may be found in the internal lymphatic glands—the mediastinal or retroperitoneal—or it may be locally manifest as a tubercular disease of bones and joints. The dorsal vertebræ, the ribs or shafts of the long bones, the hip, knee, and ankle joints are common seats of the primary disease. The tubercular virus finds entrance from the primary focus into the blood stream, either directly into a blood vessel or indirectly through the lymph paths.

I shall relate a case where a general miliary tuberculosis was set up by the ulceration of a caseous bronchial gland into a branch of the pulmonary artery.

Ponfick has described a case where a caseous mass had ulcerated into the thoracic duct.

In the lungs themselves the dissemination of tubercles may be effected through the walls of the pulmonary vessels. (*Mugge. Virch. Arch.*, Vol. 76; *Arnold*, ib, Vol. 88; *Weigert*, ib, Vol. 77, 87, and 104; *Cornil Jou. of Anat.*, 1880.) These are instances where the disease is essentially hæmatogenous in its origin.

Of *post-mortems* that I have made during the last twelve years in a large number of cases of tubercular disease of all forms, I find I have kept for reference records of 147; of which 21 were examples of acute general tuberculosis. Of these 21 cases I found evidences of pre-existing chronic tubercular lesions outside the lungs in 15, distributed as follows:—

(*a*) Disease of bones and joints, 7 cases (spine 3, hip 3, knee 1.)

(*b*) Caseous bronchial glands, 4 cases.

(*c*) Caseous retroperitoneal glands, 2 cases.

(*d*) Caseous foci in spleen and bronchial glands, 1 case.

(*e*) Tubercular pyelonephritis and retroperitoneal glands, 1 case.

In the remaining six cases, the process started in the lungs either as an acute primary tuberculosis from the outset (in one case following measles), or it was complicated with a tubercular phthisis.

Twelve cases occurred in young children between 3 and 12 years; five in young subjects between 15 and 20 years; and four in adults between 20 and 30 years.

In sixteen, portions of the lungs and other viscera were preserved for systematic histological examination, and accordingly we will now proceed to consider the morbid anatomy and histology of acute disseminated miliary tubercle of the lung.

As a primary disease, *i. e.* when there are no evidences of any pre-existing lesions, both lungs will be found uniformly affected. They are usually voluminous, retract but little on exposing them, contain abundance of air, and may even be emphysematous, especially along their free borders. The pleura is usually free from signs of inflammation.

On section they are deeply congested, and the cut surfaces are seen to be studded throughout with numbers of small, round, greyish, semi-translucent bodies, about the size of a small pin's head, which are for the most part isolated in distribution though here and there they may be so closely aggregated as to appear almost confluent. These are the so-called miliary tubercles. Variation in size, form, and general aspect may be noticed in different cases according to the stage of the disease at which the fatal termination has occurred. In very acute and rapidly fatal cases they may be so small and translucent as almost to escape detection by the naked eye. When the disease has extended over four or six weeks they are often larger and more opaque Many are now distinctly yellow, indicating a central caseous necrosis, and they also tend to become more confluent. In consistence they are mostly firm and "shotty" to the feel, and even when so small as to be hardly perceptible the cut surface of the lung gives a peculiar roughness, or granular sensation on passing the finger lightly over it. The reddened intervening pulmonary texture, though containing air, has now lost its normal spongy elasticity and feels more or less resistant and infiltrated. The condition of the bronchial glands is variable. In some cases they are enlarged and quite cheesy, thus affording undoubted evidence of the priority of the disease in them; in other cases they are merely swollen, vascular, succulent, and infiltrated with miliary tubercles evidently contemporaneous with those in the lungs.

Now what are the microscopical appearances presented by these miliary nodules in the lungs? *Are they in all cases uniform in character, or do they vary?* Before I attempt to answer these questions from the results of the examination of my own specimens, let me divert your attention for a while to the views of some of the more modern authorities on the subject, whose names I have previously referred to.

Schüppel,[24] who was one of the first to undertake a series of elaborate researches concerning the origin and structure of tubercle, formulated a histological description by which it was to be recognised and defined. His description has been more or less approved by subsequent investigators, and is fundamentally that which is given in most modern text books on pathological anatomy and histology.

According to Schüppel a true and fully developed miliary tubercle is made up of certain definite histological elements arranged somewhat as follows:—

(*a*) Centrally are placed large granular and multinucleated giant cells, which are often seen to have branching processes.

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[24] Loc. cit.

(*b*) Immediately around them are disposed other large, roundish or fusiform cells, of a similar epithelioid type, provided with a well defined vesicular nucleus.

(*c*) Arranged in a concentric fashion around the above is a reticulum with oblong meshes, in which are included numerous small cells, resembling leucocytes or lymphoid corpuscules. The branching processes of the giant cells are connected with this peripheral reticulated structure. Lymphoid cells may be seen dotted here and there between the giant cells and epithelioid elements, but it is chiefly at the periphery that they predominate in number within the reticulated meshwork.

Such a concentric arrangement of structural elements has been named by Hamilton[25] "*a giant celled system*," and is regarded as typical of the "grey miliary tubercle" or the "grey granulation" of Bayle.

Now a grey miliary tubercle in the lung, the size of a small pin's head, usually corresponds in its entire extent to three or four air vesicles, and may be found to contain as many "giant celled systems" placed in contact with one another by their peripheral zones.

The point which Hamilton insists upon is, that in such a tubercle, the outlines of the alveolar walls are no longer to be made out, they are lost by having become incorporated with the tubercle. He describes the mode of formation of such a tubercle as follows :—

At one point there is seen a thickening of the alveolar wall produced by the proliferation of its cellular elements, connective tissue cells, and the endothelial cells of the capillaries. This increases until it sprouts out into the alveolus. and in some instances it may be seen connected to the alveolar wall by a pedicle or stalk; finally, it swells out and occupies the entire alveolus and becomes organically joined to it. Similar foci of cell proliferation may be seen in various stages of development in the walls of the contiguous alveoli, and they enlarge until they ultimately coalesce to form the entire tubercle. Giant cells are formed in each focus by the excessive development of one or two cells at the expense of the others.

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[25] Loc. cit.

Regarding the significance of giant cells, many authorities, particularly Schüppel, Friedländer and Hamilton have maintained that they are special elements of tubercle.

This view, however, is no longer tenable. They are no doubt very often found in tubercles, but not constantly so; while they have been shewn to occur in other formations, such as granulation tissue. As to their source, various theories have been advanced. Schüppel,[26] who believed that the initial stage of the development of tubercle was the appearance of a giant cell, described them as developing in the interior of blood vessels, but did not give a satisfactory explanation how they derived their nuclei.

Hering looked upon giant cells as representing dilated lymphatics, within which the albumen of the plasma was artificially precipitated in a granular form by the hardening re-agents; the nuclei, which are often disposed in rows at their periphery, he thought were derived from leucocytes or the lining endothelial cells.

Ziegler[27] attributes their formation to the aggregation of leucocytes simply. Hamilton, Klein, and Watson Cheyne shewed that they could originate by the enlargement and the endogenous nuclear proliferation of epithelial cells—the alveolar epithelium. It is certain that there is more than one source for their development.

Concerning the reticular stroma of tubercle, that of the central portion, which is wider meshed, is derived from the intercellular substance, and may be more or less an artificial product resulting from the action of hardening re-agents; that of the periphery, which is closer meshed and better defined, is derived from the changes in the fibrous connective tissue of the alveolar septa. (Buhl).

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[26] Ueber du Entstehung der Riesenzellen im Tuberkel. *Wagner's Archiv. der Heilkunde*, Vol. xiii.

[27] Lehrbuch der Allgemein und Speciell Pathologie, 6th ed., 1890, Vol. i., Article 118-119.

Now the views promulgated by Schüppel in limiting tubercle to a structure composed of giant celled systems soon met with vigorous opposition from Hering and Buhl. The former met with cases, running clinically in every respect the course of an acute tuberculosis, and accompanied by the eruption in the lungs of minute nodules exactly resembling miliary tubercles, in which he failed to discover giant cells. On microscopic examination he found that many of these nodules presented all the appearances of a pneumonia, and as such he regarded them — minute disseminated foci of catarrhal pneumonia. They were cases that ran a very acute and rapid course. Buhl goes so far as to say that every case of acute miliary tubercle of the lungs originates as a desquamative pneumonia, even if the lesions subsequently do undergo a further differentiation into giant cells and a reticulated stroma. And even Hamilton—whose work, like that of his predecessors, was written before the discovery of the bacillus—recognises a pneumonic process; for he describes and figures "a peculiar form of miliary catarrhal pneumonia occurring in children, and ***liable to be mistaken for miliary tubercle.***"

Klein examined the lungs of seven children dead of acute general tuberculosis. In two of these cases the miliary nodules presented microscopically all the appearances of a pneumonia, in which there was no trace of giant cells anywhere to be found. In the other five cases he found the reticular giant celled tubercle of Schüppel predominating, and he regards this as representing later stages of development of the pneumonic variety. He gives beautiful drawings illustrating the microscopical appearances of the lesions. Klein thinks it is more correct to state that in cases of acute miliary tuberculosis the pulmonary lesions may assume either the form of a miliary pneumonia or the more highly differentiated reticular giant celled structure, according to the stage of development in which it is met with, I may here say that the results of my own investigations coincide in every way with the admirable description given by Klein of the histology of acute primary miliary tubercle of the lung; and it appears to me that his description holds good even now, for it is corroborated by Ziegler, Orth, and other pathologists in their text books.

Then again, from a clinical stand point, I have met with cases of acute general tuberculosis occurring mostly in children, in which the lungs are primarily attacked, and the dissemination of the tubercles appears to have taken place along the respiratory channels. These cases last from six to eight weeks and usually terminate fatally by the development of a tubercular meningitis. The nodular lesions in the lungs are generally much larger than miliary tubercles, often measuring from a tenth to an eighth of an inch in diameter, though, so far as my observation goes, they rarely involve an entire lobule of the lung so as to deserve the name of a caseous lobular pneumonia. Anatomically they are foci of broncho-pneumonia, larger than the miliary form of pneumonia previously referred to. It is in these cases that I have failed to find evidences of caseating glands or a primary caseous focus, and thus I have been led to suppose that the infection was not by way of the blood, but rather by way of the respiratory tract.

I will now relate some cases of primary miliary tuberculosis of the lungs that have come under my own observation; they present the variations in their naked eye appearances and minute anatomical structure which I have just detailed to you.

THE ATAXIC FORM OF ALCOHOLIC PERIPHERAL NEURITIS.

BY ROBERT SAUNDBY, M.D., F R.C.P.

Alcoholic Ataxia:—Ataxic gait; inability to stand with eyes shut; loss of knee jerks; girdle pain; recovery.

T. G, 31, clerk, consulted me on the 2nd March, 1889, complaining of pains in the calves of his legs, which were worse on walking about. His illness began on February 18th.

Previous History.—He had never had any serious illness or met with a severe accident, though he had twice fallen from his bicycle and cut his face. Denied having had syphilis or any venereal disease. He had had gout, and used to keep a public house. According to his wife and his employer he had been in the habit of "boosing" himself with beer daily. Took no breakfast, but bread and cheese or ham and a pint of ale at 11 o clock.

Family History.—His father had gout and died of it. His mother was living, aged 62, in indifferent health; 12 or 14 years ago she was insane. He had one brother and one sister alive and in good health.

History of Present Attack.—His wife and his employer concurred in stating that for about a fortnight they had noticed his memory had failed him. He forgot to do what he was told, and yesterday he imagined he had been at work the day before, although he had not been from home for several days. On Sunday, February 17th, he was in his usual bodily health and went a long walk with a friend. On Monday morning he started to walk to his office and found great difficulty in getting there. The distance was about a mile and the snow was on the ground; but he did not get his feet cold or wet. For the last two days he had had a sense of tightness round waist (girdle pain). His wife said he had complained to her of seeing double.

Present Condition.—Patient came stumbling into my room, and very nearly fell; he could not stand steadily with his feet together, and fell directly he closed his eyes. The knee jerks were entirely gone The pupil reflexes and ophthalmoscopic appearances were normal. There were no lightning pains; girdle pain already referred to had been present for two days.

His mental condition was not obviously abnormal, but his wife said that he asked her the same question repeatedly, and she was decidedly of opinion that his mind was affected. There does not seem to have been any moral change. There was no muscular wasting or obvious paralysis. No œdema or eruption on skin. Physical signs normal. Bowels regular.

Urine pale, clear, acid, 1010, contained a trace of albumen, no sugar.

He was ordered hypodermic injections of strychnine, and to become a total abstainer. Owing to difficulties, the strychnine was administered by the mouth and the abstinence maintained till lately, when he had been taking against advice, a little claret.

October 31st.—Patient came to see me again. He could walk quite well; stood quite steadily with his eyes shut and feet together; no girdle pain; knee jerks present. His urine still contained a haze of albumen. The pains in the legs were better.

Remarks.—These cases are sufficiently uncommon to make this typical example worth publishing.

The diagnosis was made on two grounds—1, the very rapid onset, and 2, the history of alcoholism. It is said that the absence of myosis, of the Argyll-Robertson pupil, of arthropathies, and of visceral crises are of diagnostic value, but all of these are absent in many cases of typical locomotor ataxia (sclerosis of the postero-external columns). The loss of memory was another point in favour of alcoholic ataxia, but again, it is not very uncommon to have mental symptoms complicating those cases of locomotor ataxia, which later develope into general paralysis.

REPORTS OF CASES.

SURGICAL CASES.

BY GILBERT BARLING. B.S., F.R.C.S.,
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Hæmo-Hydro-Nephrosis, due to an Injury; Drainage; Recovery, with small Fistula which causes no inconvenience.

R. W., aged 54, came under my care at the General Hospital, April 27th, 1889, with a large tumour occupying the front of the abdomen, on the right side. It extended upwards nearly to the costal arch, downward to the brim of the pelvis, and nearly to the middle line, but did not present at all distinctly in the lumbar region. Palpation gave the impression of a very tense cyst; there was no resonance over the front of it, such as usually exists in renal tumours. The skin and subcutaneous tissues moved freely over the tumour, but the muscles were tightly stretched over it, giving the impression that the swelling might be inter-muscular. His *history* was as follows:—About two years before admission the patient's wife, when getting into bed, slipped, and knelt on his right side with some force, causing very severe pain for a short time. Six months ago he noticed a swelling in this situation as large as an orange. This slowly increased in size until the last few weeks, during which time the increase in size has been rapid. The patient, formerly a fat man, has lately lost flesh rapidly.

Puncture with a hypodermic needle drew off brown-coloured fluid, which contained blood-corpuscles, large granular or exudation corpuscles, and cholesterine. A large cystic sarcoma was suspected, but there was sufficient doubt to call for exploration.

The urine for twenty-four hours was forty-three ounces, specific gravity 1020, acid, without deposit, and free from albumen and sugar.

April 30th.—An incision four inches long was made over the most prominent part of the tumour, and on opening the abdomen a dense, white capsule presented itself, shewing, over an area as large as a crown-piece, a staining with blood round the needle-puncture. The hand passed into the abdomen failed to find any intestine in front of the cyst, the limits of which, easily determined from the liver above, could not be defined in other directions, though the wide base evidently occupied the region of the kidney. A large trocar emptied seventy-two ounces of cocoa-like fluid with a slight urinous odour, and containing a large quantity of cholesterin. Subsequent examination shewed that this fluid contained ·5 per cent. of urea. An incision was then made through the very dense wall of the cyst, which was fully one-third of an inch thick, and the cyst edge was stitched to the abdominal wall, a glass drain being inserted. Before this was done about another twenty ounces of fluid escaped, containing bits of dark-brown material, the size of marbles, evidently old blood-clot, and a layer of this material lined the inside of the cavity.

For the first few days all went well, the cyst being carefully irrigated twice a day, whilst there was a fresh discharge, evidently consisting partly of urine, with pieces of old blood-clot. The discharge then became very putrid, the temperature was considerably elevated at night, the patient got much thinner, there were profuse sweatings, and the urine passed by the urethra diminished in quantity until it fell to as low as sixteen ounces, with only 0·75 per cent. of urea, and it was constantly alkaline. The cyst was at the same time steadily shrinking, and as I could not but feel that nephrectomy under these conditions would pretty certainly prove fatal, I refrained from further operation. By the beginning of July matters had begun to mend; the temperature was practically normal, the urine rose to between twenty and thirty ounces, with increase in the amount of urea, and its reaction was acid, whilst the discharge, which was less offensive, diminished considerably.

October 30th.—The patient left the hospital, with a sinus still discharging, but otherwise well. The urine passed was fifty to sixty ounces in twenty-four hours, specific gravity 1014 to 1020, acid, and with no abnormal constituent.

He has now been at work several months, is looking well, and has regained the weight he lost. From the sinus there is a small amount of purulent discharge, smelling of urine, but it does not amount to more than a few drachms in the twenty-four hours, and is but a slight inconvenience. On one occasion a piece of bone-like material escaped, which appears to be calcified clot.

I have placed before the patient the alternative to his present condition, viz.: nephrectomy, but he is so well able to do his work and to get about that he declines to have any further operation done at present, and I think wisely.

My explanation of the origin of the cyst is as follows:—The injury referred to lacerated the kidney-substance, the split running into the pelvis, and, as no blood was seen in the urine, the ureter was probably plugged with clot. Hæmorrhage then, with retained urine, distended the pelvis of the kidney, and in all probability, caused atrophy of the kidney-substance to a considerable degree. After the operation, when the cyst was suppurating profusely, the urine passed from the bladder became ammoniacal, and contained phosphates and bacteria, so there was probably a communication re-established between the remnant of the kidney-substance and the bladder, though it is doubtful if that still exists, as the urine is and has been for a long time acid, and free from phosphates, etc., whilst there is still a purulent discharge from the sinus.

The effect of the puncture with the hypodermic needle emphasises the risk attached to this method of exploration. Fine though the needle was and thick the cyst wall, yet there was undoubtedly slight leaking through the puncture, and this in greater amount would have formed an element of danger.

Popliteal Aneurism; Ligature of Superficial Femoral Artery; Cure of Aneurism; Gangrene of Toes.

Ordinary cases of popliteal aneurism, cured by ligature of the femoral artery without hitch or drawback, are not worth recording; it is only when some accident occurs that one's interest becomes excited to determine whether any other line of treatment would have given a better result.

The details of this case are as follows:—S. S., aged 41, admitted July 25, 1890, stated that eighteen months previously he had sprained his right leg in jumping off a fire engine, and a fortnight later noticed pain and swelling at the lower and back part of the thigh. These increased and rendered movements of the knee painful and difficult. On admission the knee was in the semi-flexed position, with a large swelling behind it, extending on to the outer and inner sides of the part and for a short distance down the leg. There was distensile pulsation of moderate degree controlled by compressing the femoral, and a loud systolic and a faint diastolic murmur over the swelling; the measurements were at the upper part of the calf 2¼ inches, at the upper margin of the patella 2¾ inches, and somewhat above this, 3 inches greater than those of the opposite limb. The skin over the aneurism was unaltered; synovitis of knee existed; there was no pulsation to be felt in the anterior or posterior tibial arteries; the superficial veins of the calf and right leg were prominent; the toes were enlarged and bulbous ended. The patient complained of loss of sensation in the leg, and occasionally of severe pain in the distribution of the peroneal nerve.

August 5th. The superficial femoral was ligatured with No. 3 catgut in the usual situation with the greatest ease and without disturbance of the vein; the incision was closed without drainage, and the usual precautions were taken to keep the limb warm and to promote return of venous blood.

August 6th. Limb very numb, toes devoid of sensation and quite cold; circulation in heel very feeble; no pulsation in aneurism; the toes remained cold at midnight.

August 7th. Heel and toes both quite warm, sensation still greatly reduced. No pulsation in aneurism, which felt much more solid.

August 9th. Toes quite cold; big toe and the next shewed dark red purplish discoloration and stasis; heel warm. The next day the lower part of the shin shewed mottling, and the calf, lines of purple discoloration over the superficial veins.

Eventually gangrene was established up to the bases of the metatarsal bones. The ligature incision was healed soundly by the seventh day.

On Nov. 5th, the dead parts were separated at the transverse tarsal joint, a very fair Chopart's stump remaining, the skin on the upper surface of which has a tendency to ulcerate easily.

In the *British Medical Journal* for Nov. 29, 1890, Mr. Anthony Bowlby states some very forcible arguments for ligaturing the popliteal artery, rather than the superficial femoral for aneurisms in the ham. This operation, which is rather in favour at St. Bartholomew's Hospital, was in my mind, but the size of the aneurism and the possibility of its being diffused, led me to regard this case as one unsuited for popliteal ligature.

Another alternative presented itself, viz.: the method of Antyllus. Although generally regarded with disfavour, there have been from time to time cases recorded which shew that modern methods give much better results with the old operation than were formerly obtained, and I was much impressed with the excellent results obtained in four cases by Dr. Post, the cases being published in the *Boston Med. and Surg. Journal*, Dec. 12, 1889. Though tempted to try the method of Antyllus, because I feared gangrene from ligature of the femoral, I eventually gave up the idea. The femoral ligature of course interrupts the circulation at two points, viz.: at the seat of ligature and at the aneurism, whilst the method of Antyllus blocks it only at one. I concluded however, that the size of the aneurism and the magnitude of the operation, if the method of Antyllus were adopted, added grave risks in addition to the possibility of gangrene, risks which did not threaten in the same degree after femoral ligature. Hence the femoral artery was tied, subsequent events fully confirming my anticipations.

KOCH'S TREATMENT AT THE GENERAL HOSPITAL.

CASES AT THE JAFFRAY SUBURBAN HOSPITAL UNDER THE CARE OF DR. T. STACEY WILSON.

Case 1.—*Gain of two stone in four months; active changes in larynx, with almost complete resolution.*

W. R., 52, stableman, under the care of Dr. Saundby at the General Hospital (*vide* Case 5, February, 1891). A preliminary notice of the progress of this case was given in April (*vide Birm. Med. Rev.*, page 230) on account of its exceptional character and the marked benefit that seemed to have resulted from small injections of tuberculin. The improvement has been maintained, and he has so far recovered that it seems worth while to review the history of the case up to the present time. For this purpose, in this and the following cases I intend to divide the period of treatment into short sections of one, two, or three weeks, whose length is determined either by the dose of tuberculin given or by the reaction produced.

It has been my practice not to give more than two injections or less per week, and thus it is possible to trace the full effect of each injection upon both the temperature and the amount of sputum. In order to shew this more clearly than by giving the temperature charts in full I have given merely the *average* temperature and amount of sputum on the day of injection and the following three or four days.

As is well known the statistical value of any average result depends upon the closeness with which the individual figures approach that average. In the case of the following clinical histories the averages I have worked out give a very true picture of the actual temperatures, and the variations are not at all great.

On W. R.'s admission to the General Hospital there were distinct signs of incipient phthisis at both apices, and he had a bad family history. The injections were begun on Jan. 6th with ·001 and were increased by about ·002 every second day.

During the first fourteen days he had four injections and reached a dose of ·008 gramme, and he lost 2¼ lbs. in weight, or 2½ oz. per diem.

Average Temperature,	M.	E.	Sputa.
On Injection day	99·4	102	118 cc.
„ Following day	100	99·8	121 cc.

(An intercurrent attack of rheumatism rather interfered with the treatment, and his general condition was unsatisfactory).

During the next seven days he had three injections of ·01 gramme and one of ·02, and gained ½ lb. in weight.

Average Temperature,	M.	E.	Sputa.
On Injection day	100	102	129 cc.
„ Following day	100·3	100·7	154 cc.

Here we see a most marked sputum reaction.

During the next seven days he had no injections and lost ½ lb. in weight.

Average Temperature, M. 99·8, E 100·6; sputa, 124 cc.

During 14 days at the Jaffray Hospital, no injections. Gain of 5 lbs. in weight, *i.e.* 6 oz. per diem.

Temperature, M. 99·2, E. 99·5; sputa, 81 cc.

During the 25 days from February 20 to March 16, he had 6 injections, namely, 1 of ·001 and 5 of ·002, and he gained 12½ lbs. in weight, *i.e.* 8 oz. per diem. This diet was "house diet," with ½ pint extra milk and one egg, also ʒii, twice daily, of cod liver oil and maltine.

Average Temperature,	M.	E.	Sputa.
Injection day	98	99·4	46·6 cc.
1st „	98·4	100	59·8 cc.
2nd „	97·4	99	50 cc.
3rd „	97·2	99·2	53 cc.

During the 20 days from March 17 to April 5th, he had five injections of ·002 and gained 6 lbs. in weight, *i.e.* 4·8 oz. per diem. Omitting two exceptional days, we have the following averages:—

Temperature.	M	E.	Sputa.
Injection day	97·9	98·3	29½ cc.
1st „	98·3	99·3	61 cc.
2nd „	97·7	99	20 cc.
3rd „	97·7	98·4	27 cc.

Here we see very clearly that an injection so small as to produce a temperature reaction of barely 1° F., can have a most marked local effect on the lung.

During the 30 days from April 6 to May 6th, he had 7 injections of ·001 and one of ·002, and gained 3½ lbs. or 1·8 oz. per diem.

The temperature averaged 97·6 morning and 98·6 evening. Occasionally rising to 99 or 100, but not shewing any definite reaction. The sputum was increased occasionally after the injection, but was not measured accurately owing to the patient spending most of the day in the open air. It occasionally reached as much as 60 cc., but was usually 20 or 30 cc., and was free from tubercle bacilli.

During the next three weeks the temperature was usually subnormal, rarely reaching 99, and the sputa continued about the same. He had 4 injections of ·001 and gained 4 lbs. in weight, *i.e.* 3 oz. per diem.

Since this time he has lost 2 lbs. in weight, but is otherwise in a very satisfactory condition.

During his four months period of treatment by injections not only has he gained more than two stone in weight but there has been a most marked improvement in his general condition and in the state of his lungs and larynx, but especially the latter.

On admission to the Jaffray Hospital on February 6th, 1891, there was much swelling of the posterior wall of the larynx and congestion of the cords, and its condition got considerably worse. On Feb. 26th there was a well-marked vertical ulcer on the posterior wall and most marked swelling of the false cords, and on the upper surface of the right one a small pustule about one-twentieth of an inch in diameter, looking like a small acne spot.

On March the 4th the swelling of the mucous membrane of the posterior wall had considerably increased, and a large suppurating patch was visible on the upper surface of the right false cord in its posterior part. The small pustule remained as before. On the 11th the false cords had improved but were still swollen and hid the true ones. The posterior wall was extremely swollen.

On the 25th of March the left true cord was distinctly more congested. A fresh spot of ulceration was visible on the posterior wall just above the left cord, but the posterior wall was on the whole less swelled.

On April 13th the false cords still rather swelled. True cords a good colour and moving well; posterior wall less thickened. This improvement continued till on June 5th all signs of active processes had ceased. The true cords were nearly of a natural colour and moved well; the false cords were still slightly larger than normal, and all swelling of the posterior wall had gone except a small pointed granulation-like prominence almost in the middle line. Both the ulcers had completely healed, and his voice was very much clearer although still rather husky at times. The only local treatment used was an occasional creosote inhalation.

As regards the condition of his lungs on admission to the Jaffray Hospital on Feb. 6th there were some signs of disease at both apices, but less so than on admission to the General Hospital. On Feb. 20th the apices had become quite clear, but there were signs of catarrhal changes at the bases of both upper lobes and also in the right lower lobe. The base of the upper lobe was slightly consolidated. The condition of the lungs has not changed much except that the condition of the upper lobes has improved somewhat although there are still some crepitations throughout the lower lobes posteriorly.

Case 2.—*Gain of thirteen pounds in six weeks; rapid Fibrosis of lung.*

J. B., aged 36, grinder. Strong hereditary tendency to phthisis. On admission there was some consolidation of the apex of the left lung, and a band of consolidation at the base of the left upper lobe. During treatment, the apex became considerably clearer, but the band of consolidation at the base of the left upper lobe increased considerably. There was nothing definite in the larynx except a little thickening of the posterior wall, which slowly subsided.

The following are the details as to the effect of the injections.

Admitted February 13th, 1891. During the first 12 days there were no injections given and patient gained about 3 lbs., *i.e.* 4 oz. per diem. Average temperature was M. 98, E. 98·6; sputa, 24 cc

During 19 days (Feb. 26 to March 16) he had 5 injections of ·001, and gained 7½ lbs., *i.e.* 6½ ozs. per diem.

Average Temperature,	M.	E.	Sputa.
Injection day	97·5	98·4	11 cc.
1st „	98·2	99·6	17 cc.
2nd „	98	98·3	8 cc.
3rd „	97·3	97·5	13 cc.

During the next 21 days (March 17 to April 6th) he had 6 injections, 2 of ·001 and 4 of ·0015, and gained 5½ lbs. or 4 ozs. per diem.

Average Temperature,	M.	E.	Sputa.
Injection day	97·7	97·4	Usually
1st „	97·6	98·1	none.
2nd „	97·7	97·8	
3rd „	98	97·8	

The patient's general condition had so much improved by this time that he thought himself nearly cured, and insisted on going home in spite of the extreme danger of such a course of action being pointed out to him.

The lower part of the left upper lobe was dull with tubular breathing and metallic crepitations, and there were undoubtedly active inflammatory changes going on in it.

A week after leaving the hospital, the crepitations were found to be more numerous, and in the course of three weeks there were metallic crepitations to be heard over the whole of the left upper lobe with distinct signs of cavity formation, but the consolidation and excavation so balanced one another as not to alter the percussion note to any extent.

In addition to this, however, the breath sounds, which were nearly bronchial in character, were most markedly interrupted by the heart rythm so that both inspiratory and expiratory sound were divided into several distinct portions. This phenomenon had been noticeable for several weeks to a slight extent, but had become very much more distinct and pronounced of late. This phenomenon forcibly suggested the probability that the pleura over the upper lobe was adherent, and that contraction of fibrous tissue in the lung was pulling on the heart and tending to draw it over. This theory received striking confirmation by the subsequent history. At this time his weight was 10 stone 3¼ lbs. and he had gained nearly 5 lbs. in the month since leaving the hospital.

During the following three weeks he lost this weight again and distinct signs of a fair sized cavity were to be detected at the left apex.

On June 13th, *i. e.*, two months after leaving hospital, when he again presented himself, a most marked change was visible in the appearance of his chest; the left shoulder was drooping and a trifle nearer the middle line than the right; the cardiac pulsation was visible and palpable in the fourth, third, and second spaces, and that of the arch of the aorta in the first space at some little distance from the edge of the sternum, shewing that the retraction of the diseased left upper lobe had not only uncovered the heart but had actually drawn it over somewhat to the left. Further examination shewed the left upper lobe to be distinctly dull except for a cavity in the outer part of the supra- and sub-clavicular region. The crepitations and metallic râles and the interruption of the sounds by the heart had almost entirely gone. The right lung had expanded so as to reach nearly an inch and a quarter to the left of the left border of the sternum in the second and third spaces and about three-quarters of an inch in the first and fourth spaces, and between it and the retracted left lung were the dulness and pulsation of the heart and aorta, etc. The lower lobe of the left lung was perfectly normal.

That a considerable increase in the respiratory area of the lungs had resulted from these changes was shewn by the fact that he could now walk twice as far as he could on leaving the Jaffray, without becoming short of breath. It is not possible at present to say that the tubercular process is at an end, but his progress so far has been very satisfactory in spite of the risk he ran by leaving hospital while active processes were still going on in his lung.

Case 3.—*Relief almost amounting to cure. Gain of 1 stone in 13 weeks.*

M. D., aged 37, labourer, under the care of Dr. Wade in the General Hospital. A short note of the early progress of the case was published by Dr. Short in the *Medical Review* for February.

The physical signs of phthisis were not very definite, some deficient resonance and harsh breathing and medium crepitation at both apices. But he had suffered for several months from night-sweats and the sputa had gradually increased in amount, and one month before admission was blood-stained.

The sputa contained tubercle bacilli and were muco-purulent and frequently blood-stained. Their colour often varied much in consequence of the admixture of nummules stained to a varying extent by small fresh or old hæmorrhages. Sometimes one or two nummules would be of a typical "rusty" colour. On admission there was about 100 cc. per diem.

He was very tolerant of the action of tuberculin and the dose was rapidly raised, and at the 6th injection ·01 was reached and at the 9th ·02, and thus during 20 days (Jan. 6 to 25th) 9 injections were given. He gained 2 lbs. 6 ozs. in weight or nearly 2 oz. per diem.

Average Temperature,	M.	E.
Injection day	97·6	98·7
Following day	98·7	98·3

During the next 22 days (Jan. 26 to Feb. 18th) he had only 4 injections of ·015 as they on several occasions seemed to induce some hæmoptysis.

During this time he gained 4 lbs. 6 ozs., *i.e.* 3 ozs. per diem.

Average Temperature,	M.	E.	Sputa.
Injection day	97·3	100·2	19 cc.
1st ,,	98·4	98·3	22 cc.
2nd ,,	98·3	98·3	21 cc.
3rd ,,	97·8	98	19 cc.
4th ,,	97·4	97·6	17 cc.

The sputum was occasionally wholly mucoid, but usually muco-purulent, and sometimes blood-stained and contained many shrunken and altered bacilli.

During the 22 days from Feb. 19th to March 12th, he had 4 injections of ·02 and gained 1 lb. 12 ozs. in weight or 1⅓ oz. per diem.

Average Temperature.	M.	E.	Sputa.
Injection day	97·4	98·5	9 cc.
1st "	97·8	97·9	9 cc.
2nd "	97·4	97·7	9½ cc.
3rd "	97·2	97·6	8 cc.
4th "	98·3	97·9	6 cc.

During the next 19 days he had 4 injections of ·02 gramme and gained 5 lbs. 12 ozs. in weight or 4·8 oz. per diem. The sputum also ceased or was simply one or two small mucoid nummules. His lungs which had been getting clearer of late now shewed almost no signs of any mischief. The temperature although sub-normal, still seems to shew to a slight extent, for two or three days, some influence of the remedy upon it, viz., a slight relative rise followed by a depression.

Average Temperature,	M.	E.
Injection day	97·6	98·1
1st "	97·9	97·8
2nd "	97·6	97·4
3rd "	98·	98·

On the 30th of March he was discharged with every probability of a cure resulting in his case. The sputa were now free from tubercle bacilli.

He was injected once a week for several weeks, and after resuming work found himself capable of active exertion. The dyspnœa from which he used to suffer now scarcely troubled him at all, and he could walk eight miles in two hours with comparative ease. The progress continued satisfactory, and from the fact that of late he has ceased to present himself at the hospital I think we may conclude that the progress is maintained. The total weight gained by this patient was 14½ lbs. in 13 weeks.

Case 4.—The last of the cases that is sufficiently advanced for a report is of a much less satisfactory character than the three preceding ones. It is the case of a man, C. Hn, aged 37, a cabinet maker. No definite history of phthisis in his family. He has however suffered from chronic phthisis for three years, and has attended as an out-patient during a considerable part of that time. Since the commencement of his illness he has lost three stone in weight, and although at times responding well to ordinary treatment and making good progress, he has on the whole lost ground. This was especially the case for the last month or two of 1890, and he was consequently admitted to the General Hospital under the care of Dr. Wade in order to try the effect of the Koch treatment.

State on admission.—Chest rather flat; expansion fair; moderate sized cavity in first left space with some surrounding dulness. Crepitations throughout the left lung and also at the apex and base of the right lung, but no marked signs of consolidation in this lung. Sputa muco-purulent, occasionally tinged with blood and increasing about 40 cc. per diem and containing tubercle bacilli. He used to suffer from night sweats, but these have not troubled him so much of late.

The following are the details of treatment:—

During ten days, Feb. 1st to 10th, he had 5 injections of ·001 gm. and lost a quarter of a pound in weight.

Average Temperature,	M.	E.	Sputa.
Injection day	98·2	100·4	41 cc.
Following day	97·8	99·2	40 cc.

During 17 days, Feb. 11th to 27th, he had 3 injections of ·001, and gained 2 lbs. 14 oz., or 2¾ oz. per diem.

Average Temperature,	M.	E.	Sputa.
Injection day	97·8	100·3	53 cc.
1st „	98·8	98·4	53 cc.
2nd „	98	98·2	52 cc.
3rd „	97·7	99	40 cc.

During the following 16 days he had 3 injections of ·002, and the effect upon the temperature was very similar to the last period, but he lost 10 oz. in the 16 days.

Average Temperature,	M.	E.	Sputa.
Injection day	97·2	100·2	52 cc.
1st "	98·3	98·3	43 cc.
2nd "	98	99·3	38 cc.
3rd "	97·7	99·5	53 cc.

In the last two instances it seems as if the injection had an antipyretic effect for a day or two, but it then passed off and the temperature rose again at night, and the sputa increased. It was therefore tried whether a more frequent repetition of the injection would produce a better result. This was not the case however. The injection even of ·001 caused, often, considerable malaise, and it did not seem at all desirable to attempt to increase the dose to any extent. As the patient did not seem to make much progress he was transferred to the Jaffray Hospital, on April 24th, and the injection treatment continued for about three weeks longer. But although he improved in many ways, it did not seem possible to find a method of using tuberculin that was beneficial to him, and the injections were therefore stopped.

The following was his state on discharge after about four months' treatment at the General and Jaffray Hospitals. Weight about 8 stone 10 as against 8 stone 5½. Sputum rather less copious and more mucoid and much less frequently blood-stained than on admission.

Lungs are much clearer than on admission, the dulness round the cavity at the left apex is less, although the cavity seems a little larger, the lower part of the left upper lobe and the left lower lobe are now perfectly clear and there are only occasional distant crepitations to be heard at the right apex and extreme base, instead of the abundant crepitations that used to be heard throughout the whole right lung.

Since leaving hospital on the 7th June, he has improved somewhat and gained several pounds in weight.

Thus, although this case is by no means a brilliant one, and may be considered in some respects as being a failure, so far as the Koch treatment is concerned, there is no doubt that he has been distinctly improved, and that his disease, which was rapidly advancing in spite of the good surroundings at his home, has been arrested for the present. How far we have to thank tuberculin for this result it is not possible to say.

Three other cases have been under my observation for the last four or five months, and two out of these, which were unsatisfactory ones, have progressed fairly well, but not sufficiently so to justify a notice of them at present. The third, a case of very early phthisis, complicated with marked anæmia and mitral regurgitation, has not been benefited in the least by tuberculin. In fact, in whatever manner or dose it was used it seemed rather to aggravate than cure the disease, which has slowly but steadily advanced during the last three or four months.

Thus, out of 7 cases of phthisis, which I have had under my care, or closely watched this year—

One has been nearly cured, gaining 14½ lbs. in 13 weeks.

One has been most markedly improved and gained 2 stone in four months.

One gained 13 lbs. in six weeks, and in spite of leaving hospital against advice, has most markedly improved.

Two are getting on fairly well.

One has been slightly benefited.

One has received no benefit whatever.

Thus three-sevenths of the cases have received distinct benefit from the treatment by small reaction producing doses of tuberculin.

PERISCOPE.

SURGERY.

BY GILBERT BARLING, B.S., F.R.C.S.

Appendicitis.—In the April number of the *Annals of Surgery* is an excellent series of articles on Appendicitis.

The first is by Dr. Herman Mynter, of Buffalo, on the Pathology of Appendicitis. He believes that disease about the caput coli may commence in the cæcum, but that as a rule the starting-point is the appendix, which, together with the cæcum, is affected with catarrh. Owing, however, to the relatively large absorbing surface in the appendix, the fluid which dilates it is absorbed, and the solid particles are left behind to form concretions which act as the mechanical causes of inflammation The following classification is given.

1. Peritonitis appendicularis adhesiva, in which the ulceration goes so deep that the peritoneal coat is affected, and adhesions are formed.

2. Peritonitis appendicularis localis, characterised by local peritonitis and primary abscess.

3. Peritonitis appendicularis universalis, in which we have diffuse peritonitis by perforation into the peritoneal cavity, either starting as such or by secondary rupture of cases comprised in Class 2.

The second article, by Dr. McBurney, of New York City, deals with the indications for early Laparotomy. He believes that, excluding the special causes of peritonitis which exist in the female, the cause of the vast majority of cases of peritonitis is an inflammatory process originating in the appendix. The mortality under conservative treatment remains large; but Dr. McBurney holds strongly that there are many cases of appendicitis of a mild character which eventually recover without active aid. The real difficulty in managing the disease lies in estimating at an early period the probable behaviour of each individual case; hence, the value of each symptom needs to be carefully weighed. Abdominal pain is often misleading from its position and varying degree, but, as a rule, after a few hours or a day, it is evident that it is located chiefly in the iliac fossa, and the exact spot where pressure produces the most severe pain should be carefully sought for, especially in the early stage. In the adult this *spot* is found very accurately to be 1½ in. to 2 in. inside the right anterior superior spine on a line drawn to the umbilicus, and it is regarded as of the highest value, "no other disease presenting this feature." Chill and vomiting may both be present and may be severe, or both may be absent. The temperature varies from 100° to 103·5° on the first day, and rigidity of the muscles on the right side is a constant and valuable sign. Tumour may or may not be appreciable during the first two days, but the enlarged appendix itself can be felt at a very early period.

In the early days rest in bed, the application of the cold coil, total disuse of the stomach if there is vomiting, and anodynes if necessary to relieve severe pain, are the indications. The use of the hypodermic needle for diagnostic purposes is condemned, as are purgatives and enemas. Most careful watching of the course of the disease is called for so that if necessary active intervention may be resorted to immediately the symptoms indicate it. If after twenty-four hours of conservative treatment improvement is apparent, or even if twelve hours later there is improvement or no advance, the medical treatment should be continued; but if, on the contrary, symptoms have become more marked, then the question of immediate operation arises. No one can recognise the signs of "impending perforation," and to wait for strong evidence of abscess, perforation, or general peritonitis is to wait often on death. Advancing disease then at the end of thirty-six hours, and in some cases earlier, calls for laparotomy; and it is important to bear in mind that though it might be feared that the operation would cause septic infection of the non-affected peritoneum, experience has shewn this dread to be groundless.

Dr. McBurney defines an early operation as "one done at a time when the removal of an actually diseased appendix is capable of putting an end at once to an active disease which has already become defined and which threatens life." Of this class of case he gives details of 24 operations performed during the last three years. Six of the operations were performed on the second day, 14 on the third day, 2 on the fourth day, and 2 on the seventh day of the disease; all the patients recovering but one, a relapsing case which presented considerable difficulty. In 22 of the patients the appendix was completely removed, in one it was only partially removed, and in another it was deemed advisable to leave it alone.

The third article is by Dr. William Keen, of Philadelphia, on the same topic as McBurney's. He sub-divides cases of appendicitis for clinical purposes into five groups:—1. A mild form, without perforation, ending usually in resolution without abscess. 2. Perforative appendicitis causing general peritonitis. 3. The most common form, perforative appendicitis with local abscess, occasionally transferred, by rupturing into the general cavity, to the preceding class. 4. A class in which the abscess forms slowly and follows a very chronic course, of months or even a year. 5. Recurrent appendicitis. The last two classes are excluded from consideration by the title of the paper.

Referring to the first class, Dr Keen points to the frequency with which remnants of these attacks are found in the *post mortem* room. This fact has been used as an argument for frequent operative interference; but the author of the paper regards it as arguing precisely the reverse, seeing what a number of people recover with ordinary medical treatment, or even without any treatment at all.

The second class of cases requires most *urgent* attention at the hands of the surgeon. Brief symptoms of recent appendicitis, or of one or more recurrent attacks, followed by sudden excruciating pain all over the abdomen, but most severe in the right iliac fossa, with the familiar picture of general peritonitis and impending collapse, are the indications for instant laparotomy. Some of these cases are of deceptive mildness until perforation occurs; in others there may be suspicion of abscess, but no certainty; and Dr. Keen considers that the local conditions are much better guides than the constitutional to an accurate diagnosis. He urges strongly the wisdom of exploratory operation, as carrying with it less danger than the disease.

The third class is that which most frequently comes under the notice of the surgeon, and a general rule is formulated that by the second day—certainly by the third day, and *a fortiori* later—the operation should be done if the following indications are present: First, if there is abdominal pain most marked in the right iliac fossa, and especially with tenderness at McBurney's point, attended possibly with nausea and vomiting. Sccondly, if there is rigidity of the right abdominal wall. Thirdly, if there is fever up to 100°, 101°, or 102°. Fourthly, if by minute and careful palpation tumefaction and increased resistance can be discovered, with possibly dulness and rarely fluctuation; and fifthly, if there is œdema of the abdominal wall. If pus is found the greatest care should be used not to separate the adhesions limiting it; if no pus, the appendix should be sought and removed if it presents any abnormal condition. Dr. Keen advises that the appendix should be tied and cut off, and that the stump should be inverted and covered by a few Lembert sutures, through the outer layers of the cæcum.

Next follows Dr. Lewis A. Stimson, of New York, on the technique of operations for the relief of appendicitis. He begins by dividing the cases into two groups, those in which the operation is begun by the making of a free opening into the general peritoneal cavity, and those in which it is limited to the evacuation of an abscess without such exposure of the peritoneum.

In the first group the general method adopted is as follows:—In addition to the usual preparations for abdominal section, the operator should provide himself with an aneurism needle charged with stout catgut and a pair of retractors with broad blades at right angles to the handle. The site recommended for the incision is at the outer margin of the right rectus for early operations, the median opening being reserved for cases of doubtful diagnosis, or for special indications. The incision should be 4 to 5 inches long, and on arriving at the peritoneum this layer should be opened at the upper part as there is less likely to be adhesion here to the omentum or intestines; should adhesions exist it is best to enlarge the wound upwards until a point is reached where the opening can be safely made. The small intestines being pushed aside, the appendix may now be visible, if not, the cæcum must be raised and the appendix sought behind it. If it is found only to have its normal attachments, the base of its mesentery is transfixed with the aneurism needle threaded with catgut, one thread of which is used to secure the mesentery and the other the appendix, which is then cut away with scissors, care being taken to collect its contents on sponges, and the stump is seared either with pure carbolic acid or with Paquelin's cautery. This method of dealing with the stump is preferred to suturing, because of the difficulty in executing the latter, and because of the time it takes; in the majority of cases, suturing is condemned as impossible.

If the appendix is unrecognisable because of adhesions, it must be sought for by palpation, and a very good guide to it is the anterior longitudinal muscular band of the colon, which terminates at the origin of the appendix. The adhesions must then be freed, some of them possibly requiring ligature. Sometimes the appendix is quite unrecognisable, and must perforce be left alone, but in such cases abscess is found, and this is of course evacuated and drained in the hope that the appendix may be obliterated by the suppurative process. In the non-suppurative cases no cleaning of the peritoneal cavity is required, except the wiping out of such blood as may have escaped the sponges, and, except in those cases where the pus is widely distributed, sponging is recommended in preference to flushing with water, on the ground that the latter may carry infection to parts previously uninvolved. If no pus has been found, and no infection has taken place during the removal of the appendix, the abdominal incision may be entirely closed without drainage. If pus is found or infection has taken place, a rubber drain should be passed down to the stump of the appendix, and surrounded with a loose packing of iodoform gauze, some of this being placed between the surrounding loops of intestine if these have come into contact with pus; under these circumstances part of the wound only is sutured. Some of the packing is removed on the first or second day, and the remainder as soon as possible; all being removed, secondary sutures may be inserted with advantage.

In the second group of cases the operation, done at a late stage, is for evacuation of abscess, and only exceptionally for the removal of the appendix. Some of these cases are as simple as opening an abscess in any other part of the body, the pus having commenced to point. For most cases of abscess, where there is adhesion to the anterior abdominal wall, evacuation through the oblique anterior incision is recommended, followed by drainage and packing, and at the same time any loose fæcal concretion should be removed, but the space will be found too small to allow of sufficient search for the appendix when the incision is restricted to the area shut off from the general cavity of the peritoneum. It is often impossible to say whether adhesion exists between the anterior wall of the abscess and the anterior abdominal wall until the peritoneum is opened. Should adhesions be absent and the general cavity be opened the opening of the abscess may with advantage be deferred for a day or two until adhesions have formed.

Dr. Stimson in some cases modifies the operation by the oblique incision as follows: having gone through the fascia transversalis he then strips up the peritoneum as for ligature of the external iliac artery, being guided by the sensation of intra-peritoneal resistance. The abscess is thus approached from behind, at a point where, in the great majority of cases, its wall is composed only of softened peritoneum, which gives way under pressure of the finger, and pus escapes, drainage and packing being then resorted to. This method is strongly recommended in preference to indefinite delay when the circumstances of the surgeon or patient are such that the risks incurred in a resort to the other method of operation would be unduly increased.

Dr. G. R. Fowler, of Brooklyn, addressed himself also to the operative technique. He refers to the importance of, as far as possible, sterilising the skin before operation, and suggests for this and other emergency operations the painting on the part of tincture of iodine a short time before making the incision. In the place of the broad retractors recommended by Stimson Dr. Fowler prefers an assistant's hands; and to keep the intestines out of the way, compresses ten inches square of several layers of sterilised gauze, in preference to sponges. He points out that it is not always easy to avoid the epigastric vessels; if the incision is prolonged well downward these are almost certain to be divided. When the cavity of the peritoneum is opened the outer edge of the wound is well retracted and pus sought towards the outer boundary of the abdominal and pelvic cavity, where it is most usually to be found, and the greatest care should be taken to mop out every drop of pus as it appears. If the cæcum is reached without finding pus the case is a favourable one, and the appendix should be removed after the manner recommended by Dr. Stimson, ligature and disinfection of the stump being preferred to suturing.

The best guide to the appendix is the anterior longitudinal muscular band, and Dr. Fowler recommends that the search should be continued either till the appendix is found or a well-marked abscess cavity; if the appendix forms part of the abscess wall it should on no account be disturbed. He concurs in the wisdom of sponging instead of flushing the abdominal cavity. In cases with well-marked tumour pus is almost always present, and the tumour with its overlying peritoneum will be found adherent to the parietal peritoneum.

A very interesting case is mentioned in which the general symptoms of appendicitis were present, but pain and tenderness in the right iliac region were absent. At the *post mortem* examination it was found that death had occurred from the perforation of an appendix which was lying to the left of the middle line an inch above the umbilicus; for such rare conditions a median exploratory laparotomy is recommended.

REPORTS OF SOCIETIES.

MIDLAND MEDICAL SOCIETY.

Wednesday April 15th, 1891.

M. A. MESSITER, M.R.C.S., President, in the chair.

The meeting was given up to a discussion of Koch's method of treating Tuberculosis, papers being read by Mr. Barling and Dr. Carter. Mr. Barling's paper was published in full, with reports of his cases, in the *Birmingham Medical Review* for May, 1891.

Dr. Carter confined his remarks to the treatment of phthisis by Koch's method. He admitted that his experience had not justified his original expectations, nor did he think that Koch's statement as to the *certain* curability of early phthisis could be substantiated. Still he considered that we had in tuberculin a remedy of distinct value in selected cases. He alluded to the necessary difficulty in removal of necrosed tubercular tissue from the lungs, and the occasional dangers of fresh inflammation of lung, hæmorrhage, and dissemination of tubercle. With regard to the selection of suitable cases, he thought there was much yet to be learnt, but expressed the opinion that early stages of the chronic tubercular type, attended with little or no pyrexia, free from marked hæmorrhage, and uncomplicated with other serious disease, appeared to be most suitable for this method of treatment.

In referring to the reaction, he thought that there was no necessary relationship between the general and local reactions; that whatever benefit accrued was due to the local reaction alone; that an energetic local reaction often occurred without any general reaction; and that less frequently a general reaction occurred without any local change. He thought it was impossible to forecast the amount of reaction, general or local, in any case, and for this reason counselled extreme caution as to dosage in the first instance. He advised an interval of at least two or three days between successive doses, and found no advantage in ever increasing the dose beyond ·01 grm. He always confined his patients to their beds until all signs of reaction had disappeared, but otherwise permitted them to go about as usual. He had no confidence in the diagnostic value of the remedy, owing to the numerous exceptions which occurred. He thought that the frequency of accidents had been much exaggerated, and that it had not been shewn that the risk was unreasonably great in proportion to the expectation of improvement in cases which were *prima facie* suitable.

In conclusion, he urged that, since phthisis was so little amenable to ordinary methods of treatment and usually progressed from bad to worse, it was unreasonable to reject a method of treatment which was capable in many cases of bringing about marked improvement; and that the benefit was likely to be still greater when combined with other recognised means of treatment, medicinal, climatic, hygienic, and dietetic. Our policy at present was to wait, work, and watch.

Dr. Foxwell deprecated anything approaching dogmatism in our estimate of the value of tuberculin in the treatment of phthisis. It was quite a common experience to find pulmonary tubercle, after a quiescence of months or years, breaking out afresh, and therefore, unless we were content to call cases of mere temporary arrest "cured" cases, it was manifest that any decision as to the curative powers of this remedy was altogether premature. Its diagnostic power in early phthisis was, he believed, considerably over-rated. In his experience the reaction was most frequently only a local one, and this consisted in a simple increase of moist sounds and expectoration, the relative amounts of both of which varied much from day to day under ordinary conditions, rendering any change in them very untrustworthy for the purposes of diagnosis. Occasionally, no doubt, a very marked reaction, both constitutional and local, with the development of fresh areæ of dulness and bronchial breathing, would help us materially in a suspicious case; but such a reaction was the exception, not the rule. He could not agree with those, however, who thought diagnostic injections unjustifiable, for he considered them, when carefully given, free from any danger to life.

As to its curative action, he feared it would never rank as a specific in pulmonary phthisis in the same manner as mercury is a specific in syphilis; nor did he think it would ever rival the good results obtained by climatic hygiene. But while relegating it to the class of other remedies amongst which iodoform and cod liver oil are eminent, he believed it would occupy the first place amongst them in importance and usefulness.

Mr. Jordan Lloyd had tried the remedy in about twenty cases of lupus and other surgical tubercular disorders, and had come unhesitatingly to the conclusion that as a *curative* agent it was absolutely valueless, whilst as a diagnostic it was uncertain and irregular. He shewed three cases of facial lupus which had been under treatment for 89 days, 81 days, and 76 days, and had ceased to react to two-centigramme injections of the remedy. Improvement had resulted in two, one had been practically unaffected, but all had relapsed since the injections had been discontinued. He referred to a case of death from acute miliary tuberculosis in a young man with tubercular cervical gland seven weeks after injection, to a case of tubercular fistula in ano where the lung trouble had become fatally aggravated by the treatment, and to two non-tubercular patients who gave most characteristic reaction.

Dr. Suckling had treated a dozen cases of phthisis with tuberculin. Some gained weight, others lost. In three cases dull areas of lung became resonant. Many of the patients expressed themselves as better for the injections. Dr. Suckling had seen no case cured, and did not consider the remedy in any way a specific. He also did not consider that it could be relied upon for diagnostic purposes.

Mr. F. Marsh said that since the introduction of tuberculin he had selected for treatment by it, as occasion offered, four typical cases of surgical tuberculosis to personally test the value of the remedy.

Case 1 (exhibited at the meeting) was a youth having a large patch of lupus over the right side of neck and cheek of ten years' duration, a tubercular ulcer on the left vocal cord, and a tubercular ulcer over the left outer ankle. Thirteen injections (·006–·012 grammes) had been given, followed at first by very marked local and general reaction. The ulcer over the ankle had healed, that on the vocal cord nearly so, and the lupus patch was very much improved. The last injection was given over two months ago. A few fresh tubercular nodules had recently appeared at the margin of the cicatrised lupus.

Case 2 (exhibited at the meeting) was a girl having a small patch of lupus on the right cheek, of four years' duration, and a large lymphatic gland just below the right ear. Fifteen injections (·003–·02 grammes) had been given, followed at first by slight general and local reaction. No improvement had taken place, but the treatment would be continued a short time longer.

Case 3 was a boy with caries of the right femur, two tubercular ulcers on the left upper arm, and one on the perinæum. The tuberculin treatment was commenced three weeks after the local lesions had been scraped, etc. Seven injections (·001–·02 grammes) had been given, followed only by slight general reaction. The sinuses had however rapidly healed, and the thigh was now quite well, the ulcer on the perinæum and one of the two on the arm had also healed, and the others much improved. In this case it was difficult to say to what extent the tuberculin contributed to this favourable result.

Case 4 was a girl with caries of the lower jaw of two years' duration. Operative treatment had so far failed to arrest the carious process, and the case seemed peculiarly suitable for the tuberculin treatment. Twelve injections (·001–·03 grammes) had been given, but no definite general or local reaction had followed. There was apparently no improvement as yet, but the treatment would be continued and larger doses given.

The results obtained in these four cases very largely corresponded with those recorded on a large scale by the various German hospitals, and were, on the whole, somewhat disappointing. That tuberculin was a remedy for certain tuberculous conditions he had however no doubt, but as yet it was uncertain and erratic in its results. Years of careful clinical observation would be necessary before a definite conclusion could be arrived at as to the extent of its remedial power, as to the conditions in which favourable results might be anticipated, as to the quantity to be administered, and as to the proper interval between the doses.

Mr. Bennett May's limited experience (4 cases) was not very favourable. He thought all the effects were more easily explained by regarding it as a powerful septic agent than by Koch's theory. The reactions were much as we should expect under such an agent. Naturally a little improvement followed where powerful local reaction had resulted, especially on free surfaces. None of Mr. Barling's cases approached a cure, and the best of them appeared to have been operated upon and to have been placed in very favourable general conditions. But they were an excellent representative set of cases, and he was very glad to have had the opportunity of seeing them.

Dr. Stacey Wilson laid stress upon the dosage as being of the greatest importance in phthisis and thought that much of the dissatisfaction with the remedy was due to the conventional method of treatment not being the one best suited to most cases. The principles upon knowledge of which treatment must be based are that one dose of the remedy protects the system to a greater or less extent from the action of a succeeding dose if given within a few days; and further, this protection is conferred whether a reaction is produced or not; also that the dose which will cause reaction varies much in different individuals. Therefore if in any individual the treatment be begun with a dose below the reaction-producing one, and successive slightly increased doses be given at short enough intervals, it is possible often so to prepare the system for each succeeding increase that no reaction is ever produced: a fact which explains some of the anomalous cases when no reaction is produced in undoubtedly tuberculous patients. Thus it is possible to increase the reaction by increasing the dose or by increasing the interval between the doses, within, of course, certain limits.

The result of careful observation had convinced him that in many cases of phthisis we get much better results from small doses repeated at long intervals than from increasing ones given at shorter intervals. We want to produce our effect with the smallest possible doses and therefore should allow at least three non-injection days to elapse between the injection ones. 'In each case it will be necessary to begin with a very small dose, say ·0005 or less, and then increase it more or less rapidly according to the case (but always allowing the three day interval) till the minimum reaction-producing dose is found; then continue giving this amount with the interval above mentioned for weeks or months, unless the absence of all reaction *together with a retardation of progress* indicates the need of an increase of the dose, or unless some contra-indication arises.

Dr. Stacey Wilson, in support of his views, stated that his results had been on the whole quite satisfactory, and in some cases highly so. One case (out of seven) is so far relieved that he can almost be called cured. He was admitted to the General Hospital thirteen weeks ago with cough, more than one ounce per diem of phthisical, bacillus-containing, blood-stained sputa, extreme night sweats, and much dyspnœa. All these conditions completely vanished and he gained 14½ lbs. in 13 weeks, and could now walk eight miles in two hours without any discomfort. The lungs had become much clearer and shew very little sign of any disease, past or present. In four other cases the dulness and other physical signs had materially lessened, although in some fresh changes had occurred at the base of the affected lobe, and the weight and general condition had improved. The gain in weight was as follows:—Case 2, 1 stone 4½ lbs. in 45 days (of which 12½ lbs. were gained in 25 days). Case 3, 13 lbs. in 40 days, with a complete cessation of sputa. Case 4, 7 lbs. in 35 days. Case 5, 3½ lbs. in 39 days, of which 2¾ lbs. were gained in the last week and accompanied by a diminution of the sputa from 60 to 40 cc. In Cases 6 and 7 the weight and general condition were stationary although the lungs shewed some improvement.

Mr. Gilbert Smith said from the experience he had had during the last four months of the use of Koch's remedy in the treatment of lupus, he felt a decided opinion of its value is yet premature. We have not given sufficient time for experimentation and observation to justify us in speaking authoritatively as to its merits. We know of many failures and some successes, the reason of its failure or the full measure of the success attending its use will require a longer period of investigation. Two of the four cases he had had under this treatment had improved to a remarkable extent. One case especially, of 20 years standing, of very extensive lupus of the face and neck, actively spreading, steadily improved up to the last injection of 300 mg. Now one month since the treatment ceased the disease is quiescent. The other two cases were in men whose family and constitutional histories were bad, both of these cases relapsed in one week after cessation of treatment. His conclusions were that this treatment has not given the satisfactory results which were expected of it, but that a sufficient degree of improvement has followed the treatment of some cases to justify him in extending the treatment for a longer period with the object of testing more thoroughly its value.

Dr. Felix Vinrace stated that he had three cases of lupus of the face undergoing Dr. Koch's method of treatment. He began with one-milligramme doses, and all the cases reacted with injections varying from 5–12 in number and 0·008–0·015 milligrammes in dose. No further reactions took place, although the treatment was continued by further injections varying from 14–17 in number, and the doses being steadily raised to and ranging from 0·035–0·050 milligrammes. During this time no new tubercles appeared, the patches became pale and shrivelled. The injections were then omitted for three weeks and during that time new tubercles appeared. The injections were then recommenced with the same dose of lymph which had produced no reaction at the last injection. Reactions reappeared and the cases were again improving. This treatment had been practised for four months.

Mr. Barling in replying, objected to the statement that tuberculin is of no curative value. Many of his cases had derived very great benefit from the remedy, and it was unfair to condemn it because discontinuance of its use was followed by relapse; much more time was necessary before the profession would be in a position to say that relapse would always follow, especially in those cases which appeared to be cured.

As a diagnostic agent, tuberculin in his experience was absolute, but from what he had heard and read of other surgeons' observations he could not insist very strongly upon this point.

The dangers from the use of the remedy appeared to him to have been greatly exaggerated, for in no case out of the large number he had treated and observed in the General Hospital was there any fatality or any serious anxiety as to the patient's condition.

In conclusion, he would reiterate his statement that if the results hitherto obtained remained permanent, gratitude is due to Dr. Koch for his remedy.

REVIEWS.

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DISCUSSION ON ANÆSTHETICS.*

THE book is a reprint from the *Glasgow Medical Journal*, and contains an account of a discussion on Anæsthetics at three meetings of the Glasgow Medico-Chirurgical Society.

The discussion, as might be expected, in a town so near the birthplace of chloroform, gradually narrowed itself into one on the comparative merits of ether and chloroform as anæsthetic agents; and the value of ether received but scant recognition at the hands of most of the speakers. In fact, Dr. Henderson, and Dr. Hartley of Leeds, were the only advocates of ether. We may say in passing, that the latter authority must have had an exceptionally fortunate experience in ether administration, when he says that the after danger of bronchitis is almost infinitesimal.

Passing on to the discussion on chloroform itself, Dr. Kirk propounded a new theory as to the cause of the syncope, which occasionally occurs during its administration He maintained that chloroform retards the blood current. When the vapour is suddenly withdrawn, the circulation regains its normal rapidity and the heart is emptied of its contents; this sudden withdrawal, not the overdose of the drug, being the cause of the dangerous symptoms. But his reasoning in support of the theory is purely didactive, and no supporting facts are disclosed.

Sir George Macleod gives an interesting account of 35 years' experience of chloroform, and some valuable hints as to its method of administration.

*** Discussion on Anæsthetics. Edited by J. W. Downie, M.B. Glasgow: Alex. Macdougall.**

Dr. Woodburne strongly insists on the advisability of two medical men being always present during the "production of chloroform anæsthesia," to look after the anæsthetic and the pulse, and would encourage legislation to that effect. This would in many cases be quite impossible.

The President, Dr. Macewen, concludes the discussion by giving an admirable address on the physiological action, dangers, and method of administration of chloroform and ether.

We quite agree with him as to the great importance of more general systematic teaching of the administration of anæsthetics. In many medical schools such instruction is given, but it should be universal and compulsory. A certificate of proficiency in the administration of anæsthetics at the close of a student's career is of more importance in his professional life than the one of proficiency in the art of vaccination which is now required.

Dr. Macewen recommends in occasional cases a mixture of ether and chloroform given with a Clover's inhaler. But we must be allowed to point out, that the mechanical mixture of substances of different volatility is always open to the grave objection that the composition of the inhaled gas will constantly vary during the administration.

We have also grave doubts whether it is an advantage to have a second administrator to watch the pulse. In our opinion the giver of the anæsthetic should watch both the pulse, face, and respiration; and any division of labour is apt to diminish his sense of responsibility and is fraught with danger to the patient.

The book is altogether well worth reading, and cannot fail to be instructive, containing, as it does, the views of some of the most distinguished Scotch anæsthetists.

A MANUAL OF THE PRACTICE OF MEDICINE.*

To write a text book is, for most authors, to collate from the best sources, and to group as tersely as may be, the newest and most generally accepted theories and teaching. With such materials does the ordinary text book compiler settle down to write about many things of which he knows much and many of which from the necessities of the situation he can know but little more than his readers.

It is the great merit of this manual of Dr. Taylor's that we are throughout impressed by the feeling that it is not mere hack work, but that we are always under the influence of the personality of the writer. He is not content only to state different opinions, but is willing to give us his own, and his reasons for holding them.

The book is thoroughly well got up and possesses a capital index. It can be cordially recommended to all medical men as well as to students, for while it covers the whole range of medicine it deals chiefly with diagnosis and treatment. It reflects the greatest credit upon Dr. Taylor and the school of medicine which has already given us the work of Bright, Addison, and Fagge.

DR. NEALE'S MEDICAL DIGEST.†

No work of this kind has more thoroughly established its position as being invaluable to all workers in medicine, but this fact has to some extent been responsible for the limitation of its circulation among members of the profession. They have thought it admirable for such as had time to write papers, or were obliged to have recourse to works of reference for editorial or lecturing purposes, but it would be of no use to the overworked mass of the profession.

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* A Manual of the Practice of Medicine. By Frederick Taylor, M.D., F.R.C.P., Physician to Guy's Hospital. London : J. and A. Churchill. 1890.

† Dr. Neale's Medical Digest. Third Edition. 1891.

That to such especially it would be of great assistance can readily be shewn by an examination of almost any page. Take erysipelas for example; while almost two columns are filled with references to papers dealing with its etiology and diagnosis, almost as much space is given to treatment; and under the head of the remedies that have been used we are referred to the source from which we may obtain fuller information concerning each. The practitioner may not have time to pursue these investigations, but he will get a very helpful list of remedies and methods at a glance.

Probably no public medical library is without this work, and it ought in its present up-to-date form to be on the shelves of every practitioner.

REPORT OF THE CITY HOSPITAL, BIRMINGHAM.*

This is a very well prepared and altogether creditable record of the work done during 1890, creditable alike to the City Authorities and to their Medical Officers. 2,455 cases of scarlet fever were treated with a mortality of 169, or 6·88 %. This, as Mr. Manning points out, is nearly 35 per cent. less than the mortality amongst patients treated at their own homes, as, moreover, those so treated are of a better class than the hospital patient, and able to command good nursing, food, and medical attendance. Mr. Manning very properly estimates, that the average mortality would have been much higher if the hospital had not been provided for those who are less able to be cared for at their own homes. It is interesting to note that an epidemic of rötheln occurring among convalescents from scarlet fever proved more fatal than the fever itself.

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* Report of the City Hospital, Birmingham. By N. S. Manning, F.R.C.S.I.

Some very interesting diagrams are given to illustrate the number of admissions into the hospital, and the different complications of the disease.

Local Notes.

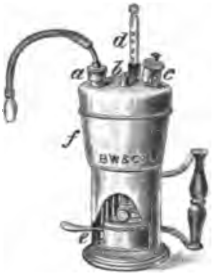
ON June 18th, Dr. Foxwell proceeded to his M.A. and M.D. at Cambridge. The subject of his Thesis for the latter degree was "The condition of the Heart in Debility."

THE vacancy in the office of Surgeon to the General Hospital, caused by Mr. Bartleet's death, has been filled by the election of Mr. Gilbert Barling. For the post of Assistant Surgeon thus rendered vacant there are two candidates, Mr. George Heaton, F.R C.S. and Mr. Felix Vinrace, F.R.C.S.

DR. T. SYDNEY SHORT has been appointed Assistant Physician to the General Hospital vice Dr. Simon who has become Physician.

New Inventions, Drugs, etc.

BURROUGHS, WELLCOME & CO.'S QUININE TABLOIDS.—We have received for inspection and trial a specimen of Tabloids of Quinine Bisulphate. We believe these are much more readily soluble than ordinary pills of quinine. The crystals are reduced to a fine powder and compressed in such a way as to disintegrate in the stomach within a minute from the time they are swallowed. In proof of this one of the Quinine Tabloids may be placed in a glass of water; it will completely disintegrate in less than two minutes. The Tabloids possess all the advantages of a solution in point of rapidity of action, while at the same time they are the most portable form of medicine, and on account of the more flattened shape are more easily swallowed than ordinary round pills. Bisulphate of Quinine is soluble in ten parts of water while the Sulphate usually requires 740 parts.



Mackenzie's Hot Air Inhaler.—This inhaler is considered to be an improvement on the idea of Weigert. The boiler may be partly filled with either water, glycerine, or oil according to the temperature desired for the air to be inhaled. The box "A" (shewn on the sketch) contains a sponge which may be saturated with any volatile medicament, then as the hot air is drawn through the aperture "B" and makes its exit from the mouthpiece, the inhalant is volatilized and conveyed into the lungs and air passages. The boiler contains a coil of metal tubing and the air drawn through it becomes thoroughly heated to the temperature of the boiling liquid. This boiler is made of very strong material and is fitted with a safety valve so that there is very little chance of an accident occurring. The lamp may be filled with methylated spirit and contains sufficient spirit to heat to boiling point the boiler when half full of glycerine.

Caffyn's Malto-Carnis with Cocoa.—This preparation contains 66 % of Caffyn's liquor carnis (uncooked juice of beef) in combination with extract of malt and cocoa. It is a very pleasant and nutritious article of diet and should find favour in the sick room.

Miscellany.

While cross-examining Dr. Warren, a New York counsel declared that doctors ought to be able to give an opinion of a disease without making mistakes. "They make fewer mistakes than lawyers," responded the physician. "That's not so," said the counsellor; "but doctors' mistakes are buried six feet under ground, and lawyers' are not." "No," replied Warren, "but they are sometimes hung as many feet above ground."—*Montreal Legal News.*

New Books, etc., Received.

Lewis's Pocket Medical Vocabulary. London: H. K. Lewis.

Notes on the Additions made to the British Pharmacopœia, 1890. By F. T. Roberts, M.D., F.R C.P. London: H. K. Lewis.

Discussion on Anæsthetics. Edited by J. W. Downie, M.B. Glasgow: Alex. Macdougall.

Intubation of the Larynx By James B. Ball, M.D., M.R.C.P. London: H. K. Lewis.

Neale's Digest. London: Ledger, Smith, and Co.

Report of the Birmingham City Hospital, 1890.

Illustrations of the Inductive Method in Medicine. By Wm. Murray, M.D., F.R.C.P. London: H. K. Lewis.

Diseases of Women By Arthur H. N. Lewers, M.D., M.R.C.P. Third Edition. London: H. K. Lewis.

Vocal Reinforcement. By Edmund J. Myer. New York: American Publishing Company.

The Nursing Record Series. (2) Norris's Nursing Notes. (3) Practical Electro-therapeutics. (4) Massage for Beginners. London: Sampson Low and Co.

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THE

BIRMINGHAM MEDICAL REVIEW.

AUGUST, 1891.

ORIGINAL COMMUNICATIONS.

HEADACHES.

BY C. W. SUCKLING, M.D. LOND., M.R.C.P.,
PROFESSOR OF MEDICINE AT QUEEN'S COLLEGE; PHYSICIAN TO
THE QUEEN'S HOSPITAL, ETC.

HEADACHE or Cephalalgia is a symptom and not a disease. No symptom accompanies more varied conditions than headache. It is far more frequently an accompaniment of some general disturbance than of actual organic disease of the brain. It varies much in intensity and extent, and may be localised or diffused, or involve one half of the head. The following varieties may be distinguished although it is very difficult to make a strict classification:—

1. Anæmic.
2. Hyperæmic or congestive.
3. Hysterical or clavus.
4. Gouty.
5. Neurasthenic.
6. Pyrexial.
7. Rheumatic.
8. Syphilitic.
9. Toxic.
10. Periodical.
11. Dyspeptic.
12. Organic.

1. The *Anæmic headache* is the most common; it is not always a prominent symptom in ordinary cases of anæmia, but is far more marked in chlorosis. It is usually vertical or frontal, relieved by the recumbent and aggravated by the upright posture. It is usually relieved by alcohol in moderate quantity. Severe headache in anæmic or chlorotic subjects should always

receive attention. I have seen several cases of coma and hemiplegia occurring in chlorotic girls from thrombosis of the superior longitudinal or lateral sinus, in which severe headache, either vertical or unilateral, preceded the onset of these symptoms. If treated early such thrombosis might possibly have been prevented by rest in bed, and the administration of iron and digitalis with stimulants. Headache is very frequent where anæmia occurs in brain-workers. I constantly meet with patients complaining of frontal headache who are also slightly anæmic and who have much mental work. The administration of iron salts and small doses of bromides, together with a proper regulation of the hours of work, continued with fresh air and appropriate diet, soon effects a cure.

It is important to remember that optic neuritis may be caused by anæmia and chlorosis, so that the combination of headache and optic neuritis in these affections does not necessarily indicate the presence of brain disease. The headaches of superlactation, menorrhagia, leucorrhœa, etc., are due to cerebral anæmia.

2. The *Hyperæmic headache* is usually frontal; it is aggravated by the recumbent position and by alcohol, and relieved by purgatives. The congestion may be active or passive. The headache of excitement and of mental strain is probably due to persistent active hyperæmia of the brain. The headache caused by coughing or by tight collars is due to passive hyperæmia. Excessive mental work is a common cause of headache, and may lead to cerebritis or may cause hemiplegia. A little time ago I saw a girl about nine years old who had been ill for several weeks with high fever, constant frontal headache, and delirium; there was no optic neuritis and no vomiting. The child had been much overworked at school and had suffered from insomnia and headaches for some months before she was removed. She ultimately completely recovered. A health inspector, who had been anxiously working for an examination in his evenings while continuing his arduous duties during the day, began to complain of headache; in a little time he had an attack of apoplexy which left him hemiplegic.

After slight attacks of sunstroke, persistent headache, supposed to be due to cerebral hyperæmia, often occurs. I have several times met with headache in elderly gentlemen (over 50), usually frontal, and due to the morning cold bath. When the latter was discontinued the headaches have at once ceased. It is certainly dangerous for people over 50 to take a cold bath in the morning.

Apoplexy is rife during the cold weather. In one day, there being a sudden frost, two cases of apoplexy and two of profuse intestinal hemorrhage occurred at the Infirmary. Old people should be warmly clothed in winter.

The headache of constipation is probably partly due to cerebral congestion and partly to toxæmia. The hyperæmic headache is common in large eaters and in plethoric individuals. One often meets with cases where periodical attacks of cerebral congestion with severe headache, which finally end in apoplexy, are relieved for the time being by epistaxis. I can recall at least a dozen cases where attacks of headache and epistaxis have ended in apoplexy. In such cases the diet should be carefully regulated; no late suppers allowed, and great care is required in the administration of stimulants and in preventing constipation.

The headache that follows an epileptic fit is due to hyperæmia. The hyperæmic headache must be treated by purgatives, low diet, the bromides and ergot, leeches, and venesection. A large mustard plaster over the liver is very effectual in checking epistaxis and in relieving cerebral congestion.

3. The *Hysterical headache* is frequently localised in one spot (clavus). Before arriving at a diagnosis care must be taken to exclude organic disease. Isolation, as is well known, is *the important* factor in the treatment of all hysterical symptoms. Valerian, asafœtida, and the bromides are useful.

4. The *Gouty headache.*—I have met with one case where headache was very severe in a gouty patient. A schoolmaster at the Workhouse, who had suffered from many typical attacks of gout, complained of severe pain on the top of his head. There was considerable fever but no delirium. An ice bag constantly applied was the only thing that relieved the pain. The adminis-

tration of iodide and bicarbonate of potassium was persisted in with milk diet, and the man recovered in a fortnight. Gout is a great cause of granular kidney, and this may explain many gouty headaches.

5. *Neurasthenic.*—Neurotic and neurasthenic individuals very often suffer from headache. In some cases anæmia is present, or there has been mental strain. In other cases worry, anxiety, or other depressing emotion has been at work. In nearly all cases there is hereditary neurosis. Women at or after the menopause often suffer severely. A lady 41 years of age had suffered with severe headache for six months before she came to me. The pain was chiefly occipital, but it varied in position and it was often over one or either eye. She suffered most at night but there was no specific taint discoverable. A host of remedies had been tried but without much benefit. She was isolated and placed under favourable conditions, being relieved from all work and worry. Indian hemp at times eased the pain, but iodide of potassium was found to do more good, and now, after taking it for months, she is slowly getting better. Iodide of potassium should always be tried in obstinate headaches, especially when the pain is worse at night; it gives relief even when the headache is not specific. In the neurasthenic headache mental strain and anæmia are often present together.

6. *Pyrexial headache.*—This is typically seen in typhus or typhoid fevers. In typhoid fever it is often very severe in the early days of the disease; is usually frontal and may lead to the suspicion of meningitis; it ceases however when delirium supervenes. It is relieved by the ice cap and by antypyrin with bromides. The headache accompanying catarrh of the frontal sinuses and influenza is well known. I have several patients who are still suffering from headache, vertigo, and other nervous affections, the result of influenza.

7. The *Rheumatic headache* is easily recognised by the accompanying tenderness of the scalp and by history of exposure. Anodyne liniments with iodide of potassium and the salycilates usually soon cure the patient. Care must be taken to keep the

patient in a warm room, and to remove him if the house be damp. A damp house has been responsible for the condition of many cripples.

8. The *Syphilitic headache* is very common although often unrecognised. Its recognition is important in that it is generally the first symptom of the onset of grave cerebral lesions, and if treated promptly a complete cure may result, while if untreated grave and incurable symptoms may supervene. It may be situated anywhere, and may or may not be accompanied with local tenderness, and may be diffused or localised. It is usually worse at night, but in rare cases may be more severe during the daytime. Moreover, all nocturnal headaches are not syphilitic. It may occur many years after the primary sore. It is usually due to gummatous meningitis or pachymeningitis, and is usually cured by full doses of iodide of potassium, but very often mercury must be given also, preferably by inunction. Free counter-irritation of the scalp with iodine is very useful. When anæmia is marked iron is also a useful and necessary addition. The presence of nodes, iritis scars, etc., of course renders the diagnosis easy, but in many cases there are few external signs of syphilis, and there may be no history of infection and no scar. I have many times seen cases in which incurable hemiplegia has supervened from thrombosis in a vessel diseased from syphilis, and where severe headache has preceded the attack for weeks. Such a calamity may possibly be prevented by prompt recognition of the headache and appropriate treatment.

9. The *Toxic headache*—*e.g.* the headache of uræmia, lead poisoning, tobacco, alcohol. Strictly speaking, pyrexial, gouty and syphilitic headaches fall under this group. Tobacco, especially cigars, cause frontal headache and attacks of migraine. Lead poisoning is a common cause of severe frontal headache. I have a man under my care now who has a marked blue line on the gums (the presence of this however, is not necessary for diagnosis) optic neuritis and intense frontal headache. He has suffered from this constant headache, which completely incapacitates him for several months, but is slowly improving under the

influence of counter-irritation with iodine and the administration of iodide of potassium and epsom salts. I saw this man this week and he says he has been completely cured by an attack of copious epistaxis. If I meet with another case of such severe frontal headache, I shall try the effect of leeches applied to the nostrils. It is important to remember that headache, vomiting and double optic neuritis, the three characteristic symptoms of cerebral tumour, are often caused by lead, and that the blue line may be absent. In all cases, the occupation of the patient must be ascertained. Alcoholism is a frequent cause of headache; the frontal headache after a debauch is well known. I have seen in two instances, persistent and severe occipital headache in men who have been heavy drinkers, and who have had contracted livers, without ascites.

Alcohol may cause meningitis over the surface of the brain. I saw last year a man who had been a heavy drinker, and who for months had been obliged to keep his bed on account of severe headache, mostly vertical; it was occasionally attended with delirium, especially at night, and at times caused him to scream. An ice bag gave relief, and the continuous administration of iodide and bromide of potassium with occasionally doses of hydrobromate of caffein resulted in perfect recovery after an illness of several months duration. The subjects of chronic Bright's disease often complain of headache. It is one of the most prominent symptoms for which they seek relief, and it may be frontal or vertical, but is most frequently occipital. The subjects of this headache are anæmic and the pulse though most commonly of high, may be, and often is, of low tension.

It is important to bear in mind the fact that albumen may be absent for many days in these cases. I well remember the case of a gentleman who came to me complaining of constant headache; he was anæmic, but his urine did not contain albumen or casts, and its specific gravity was 1016, his pulse was of low tension, there was no cardiac hypertrophy and no retinitis. I suspected his kidneys were diseased, but could not give a definite opinion upon a single examination. He afterwards died from uræmic coma, and his doctor told me that at times his urine was full of albumen at other times quite free. In uræmic headache, where the pulse is of low tension the citrate or hydrobromate of caffein gives much relief; where the pulse is of high tension, nitroglycerine, iodide and bromide of potassium with purgatives and regulation of diet. It is remarkable how frequently the pulse is found to be feeble in cases of granular kidney, and how often there is little, if any, appreciable cardiac hypertrophy. Such cases have a very grave prognosis, worse than when there is high tension and cardiac enlargement. Uræmic headache may be strictly local and may simulate migraine. Chloride of ammonium often gives great relief in these uræmic headaches.

10. *Periodical headache* (hemicrania, migraine, megrim) is of common occurrence. It is more frequently met with in females but is common also in males. It attacks children very commonly and occurs at all ages, but tends to cease or diminish in intensity as age advances. It is markedly hereditary, the heredity being direct or indirect (parent having some other nervous affection). It is often associated with gout and epilepsy; the relatives of migranous patients often being afflicted with this or some other nervous disease.

Headache is the most pronounced of the symptoms of an attack and may exist alone, but various sensory and vaso-motor symptoms are commonly present also, together with a slow pulse and alteration in size of the pupil; the attack being often terminated by vomiting.

The sensory symptoms vary much, and may exist without any headache or vomiting; ocular disturbance is frequent; various spectra occur; the fortification or zigzag spectrum being well known. Dimness of vision or hemianopia may be present. Numbness of one extremity, generally of the upper limb on the opposite side to that on which the headache occurs is often observed; occasionally the hearing and taste are modified, and there may be tinnitus and vertigo. The headache is usually severe and localised in one temple, or over one eye, or over one half of the head, or it may be occipital, and in rare cases may spread all over the head and even down the neck. It may be so severe that the patient is obliged to go to bed sometimes for twenty-four hours or more. The attacks are often a serious drawback, incapacitating the sufferer for sometimes as much as a third of his time.

Various paralyses may occur, such as ptosis or paralysis of all the muscles supplied by the 3rd nerve; also aphasia, attacks of which may constitute an attack. In some cases paralysis of one upper extremity, or hemiplegia may follow an attack.

The diagnosis of migraine is usually easy, but unless care be taken to obtain a clear history of the case mistakes may be made. I recently saw a middle-aged gentleman who had become aphasic and hemiplegic after a severe headache. I noticed some ptosis on the side on which he had had pain, and this at once enabled me to suspect the nature of the illness. I obtained a clear history of migraine and gave a favourable prognosis. In a few days all the symptoms had passed off. In children migraine is common. The headache is very severe and often attended with pyrexia and vomiting; here, unless a clear history is obtained, a mistake in diagnosis may easily occur.

Care is required in distinguishing between migraine and epilepsy. The pulse is often very slow during an attack of migraine and the pupil small, while there may be pallor or flushing of one side of the face.

The prognosis is usually favourable, not for complete cessation of the attacks, but for their amelioration. At the same time it is important to bear in mind the fact that ptosis, paralysis of the 3rd nerve, aphasia and hemiplegia, although usually transitory, may become permanent; a statement which also applies to hemianopia. Optic atrophy may ensue. It is also a fact that the subjects of migraine are especially liable to vascular occlusion and rupture. General paralysis and various forms of insanity have been preceded by attacks of migraine.

The Treatment.—In the intervals of the attacks care must be taken to place the patient in as favourable a condition as possible. The physician must forbid tobacco, alcohol, or excess in any way—in mental work especially; hot and crowded rooms are to be avoided; errors in refraction should be corrected, and the diet carefully regulated.

Indian Hemp.—One-sixth of a grain of the extract taken in a pill twice a day continuously has in many of my cases given great relief, diminishing the severity and number of the attacks. The addition of one-tenth of a grain of Phosphide of Zinc, and Arsenic one-thirtieth of a grain, increases the efficiency of the pill.

Nitroglycerine.—One minim of the one per cent. solution two or three times a day after meals, continuously, is often effectual in diminishing the severity and number of the attacks.

For the actual attacks, rest in bed in a dark room is sometimes necessary. The following draught often gives relief:—

℞	Antypyrin - -	gr. x.
	Am. Bromid. -	gr. x.
	Sp. Am. Co. - -	♏ xx.
	Aq. Menth. Pip.	℥ ss. every hour.

The preparations of Caffein, Exalgine, Phenacetin, Antifebrin, Chloride of Ammonium, Guarana, Butyl Chloral Hydrate, may be tried.

Many cases, especially where heredity is marked, are unaffected by treatment. A doctor's wife to my knowledge has tried every drug that has ever been recommended for the disease, and she tells me that nothing has ever done her any good. For the ptosis and paralysis the local application of a gentle faradic current is useful.

11. *Dyspeptic.*—This headache is usually frontal and accompanied by the symptoms of gastric catarrh; blue pill with euonymin usually removes it.

12. *Organic.*—Headache is one of the most frequent symptoms of organic disease of the brain or its membranes. The pain of organic disease is usually persistent, though attended with exacerbations. It varies much in intensity, and its locality is no guide to the situation of the lesion. As a rule lesions below the tentorium cause occipital headache, but lesions anywhere above the tentorium usually cause frontal headache. Serious

organic disease may exist without headache, or in fact any symptoms.

The headache of cerebral tumour is relieved by purgatives and a somewhat low diet, aggravated by constipation, full diet and alcohol. Antipyrin and the bromides usually give relief; painting the forehead with iodine, counter-irritation at the nape of the neck often relieves. When the pain is very severe, morphine should be injected hypodermically, there being considerable danger of cardiac inhibition and sudden death.

The intense pain which occurs in chronic otorrhœa and which is due to pachymengitis is well known. It may be attended with optic neuritis even when there is no purulent collection; the pain is usually lateral on the affected side, or may be frontal. Leeches, counter-irritation and purgatives afford relief, but the ear must receive proper attention.

I frequently meet with patients complaining of headache who have previously received a head injury at a more or less remote period. A blow on the head may be followed after a long interval by serious symptoms.

A lady who had received a blow on the head, without a wound, eighteen months later began to suffer with headache and tenderness of the skull. The skull gradually enlarged till she was unable to sit up for more than a few minutes at a time. The enlargement was quite symmetrical. The condition is gradually getting worse, and there can be little doubt that it is an osteitis of the flat bones of the cranium started by injury. I have now another case, that of a woman injured by the fall of a box on the head. There is intense headache and tenderness and the skull is enlarging; a month ago the circumference was 22¼ inches, it is now 23 inches.

Where there is a scar it is quite justifiable to trephine if there be chronic tenderness and pain in or near it unrelieved by other treatment.

The sufferers from traumatic headaches are usually anæmic, and I have had considerable success with continued counter-irritation and the administration of iron salts with iodide and bromide of potassium. A prolonged rest is nearly always required, and it is usually some months before the patient is able to resume his duties.

Headaches in Children.—Children suffer from headaches produced by the same causes that act in adult life. They are liable to migraine, and in their case, as already mentioned, this affection is often very severe, the attacks being attended by vomiting and pyrexia. At the Children's Hospital I daily have to prescribe for children suffering with frontal headache; they are generally anæmic, talk in their sleep, and are overworked at school. In fact nearly half my time at the out-patient clinic of the Children's Hospital is occupied by stamping the papers "unfit for school," on account of frontal headache, vertigo, chorea, insomnia, or some other nervous affection. In some cases the frontal headache is due to errors of refraction, especially hypermetropia or astigmatism, and in these cases the continuous wearing of appropriate glasses is necessary for cure. In adults too I have often met with headache the result of using unsuitable spectacles. I have also noticed that children complaining of frontal headache are often suffering from acute tonsillitis. They do not complain of their throats but of their forehead. So that in any recent case of frontal headache in childhood I make it a rule to examine the throat.

Carious teeth are a cause of headache in many children, not only of a neuralgic character but also of a localised form. Every practitioner knows the importance of giving cautious prognosis in headache in children. A continuous headache, usually frontal and attended with exacerbations causing the child to cry out, often immediately precedes the development of tubercular meningitis, and continuous vomiting is equally significant.

Headaches in Old People.—Old people suffer from headaches due to attacks of cerebral congestion. Where there is considerable atheroma headache and vertigo are common. Contracted kidneys are of common occurrence in old people, and many of their headaches are of uræmic origin and are usually relieved by a few leeches. Citrate or hydrobromate of caffein with small doses of the bromides are most useful for the treatment of this class of headaches.

In all cases of headache the urine must be examined for albumen and casts, and its quantity, specific gravity, and urea percentage ascertained. The fundus oculi also should be explored, and the presence or absence of optic neuritis, optic atrophy, or retinal changes ascertained, and the ocular refraction tested.

I may mention that I have occasionally met with headache as a prominent symptom in middle-aged men in whom I have found the knee jerks absent and other signs of chronic degenerative disease of the nervous system present. Headache is occasionally a prominent symptom of locomotor ataxy and multiple sclerosis.

To obtain statistics of the cases of headache that I have met with I have been obliged to confine myself to my private case book. It is impossible to keep reliable records of a large number of hospital out-patients. I have enumerated those cases only in which headache was the prominent symptom, the symptom for the relief of which the patient came. I have not enumerated cases in which there were various morbid sensations in the head apart from pain. I find I have notes of 186 cases of headache met with during the past two years.

Alcoholism, usually occipital, 8.

Anæmia 32, with mental strain, 12.

Atheroma 6. In 2 cases, periodical attacks due to cerebral congestion and relieved by leeches.

Bright's disease 10. In 6 cases, headache occipital; in 3, frontal and occipital; in 1, *localised over one eye.*

Climacteric.—In 3 cases, headache apparently due to climacteric.

Chronic degenerative disease of nervous system. In 6 cases where headache was chiefly complained of there were unmistakable signs of general paralysis; in 5 cases, the knee jerk was lost and there were other symptoms of tabes.

Cerebellar tumour accounted for 2 cases. *Chronic Ear disease* for 2.

Optic neuritis was the only important indication of organic disease in 3 cases.

Dyspepsia and hepatic disturbance, 5 cases.

Epilepsy 9 cases. The headaches were not in all cases immediately consequent on the attacks, but occurred between.

Gout 4 cases, not severe, vertical.

Hypochondriasis 2 cases.

Hysteria 3 cases.

Injury to the head 12 cases. In several cases the injury had occurred a year or more before the onset of headache. In two cases after the headache had existed some months epilepsy supervened.

Influenza 6 cases, combined with vertigo.

Migraine 18 cases.

Neurasthenia 7 cases.

Naso-pharyngeal Catarrh 2 cases.

Ocular Strain 4 cases, frontal.

Plumbism 4 cases, frontal.

Phthisis 3 cases; probably due to cough; relieved by remedies for the cough.

Syphilis 18 cases; all cured by specific treatment.

The most common varieties were—Anæmic headache 32 cases; syphilitic headache, 18 cases; periodical and migranous, 18 cases; mental strain, 12 cases; traumatic, 12 cases; Bright's disease, 10 cases.

It will be seen that functional headaches are far more numerous than those due to organic disease, but that syphilis is a potent cause; this headache is usually severe, and its prompt treatment of the utmost importance.

Injury to the head is also a common and potent cause of severe and chronic headaches.

POST-GRADUATE LECTURES ON THE PATHOLOGY OF TUBERCULOSIS.

BY GEORGE F. CROOKE, M.D. (EDIN.)
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(*Continued from page 24.*)

THE first case which I have to relate is one of unusual interest, and I will therefore describe it in detail.

A young unmarried woman about 28, a general servant, was admitted on July 25th, 1889, into the General Hospital under Sir W. Foster in a moribund condition.

She was more or less comatose, and much too ill to bear anything like a satisfactory physical examination. Dr. T. S. Short, to whom I am indebted for the following account of her symptoms, found her almost pulseless, and suffering from great dyspnœa; her features were dusky and livid; lips, ears and finger tips blue; the conjunctiva were yellowish, and her extremities were cold and clammy. Her temperature was nevertheless elevated, 103·8; heart sounds almost inaudible; she had moist crepitations all over the chest, back and front, but no marked dulness.

The only history obtainable from those who brought her to the hospital was that she had been ailing for four years, but no details of this illness could be elicited. She began to get worse about three weeks before admission with increase of dyspnœa, œdema of legs and face, swelling of the abdomen, jaundice and blueness of lips During the last week she had got rapidly worse. She died two hours after her admission.

Post mortem examination revealed a well marked stenosis of the mitral valve, the orifice admitting only the tip of the little finger.

There was a small patch of ulceration on the auricular surface of the posterior segment of the valve; the aortic valves were thickened and fringed with a few small recent vegetations (acute verrucose endocarditis). *Both lungs* were deeply congested, rather tough and leathery in consistence, and presented in all respects the character of a mechanically congested lung of long standing (brown induration.)

On section, they were seen to be studded all over with *very minute translucent granules*, looking at first glance like very small droplets of water or bubbles of air, or the minutest frog sprawn.

In fact, it was by mere accident that they were recognised by allowing the light to fall somewhat obliquely on the cut surface, and in any hurried examination they might easily have been missed. At first, on account of their minuteness and unusual appearance, I was in doubt as to what they really were, and in such a condition of the lungs, the result of a stenosed mitral valve, I never thought of miliary tuberculosis. Finding them, however, in both lungs on the surface of every section through them, I at once made some sections with the freezing microtome, stained them in picrocarmine, and mounted them in iodized serum. On examination with the microscope, there was no doubt that each of these minute translucent points corresponded with a small focus of pneumonia. On further staining sections with carbol-fuchsine according to Ziehl-Neelsen's method, I found that each pneumonic focus contained tubercle bacilli, and these at once cleared up all doubts as to the nature of the miliary lesions. On searching for some primary focus of infection, I found the bronchial glands on both sides, swollen, pigmented and caseous on section, and on the left side one of these was firmly attached to a branch of the pulmonary artery through the wall of which it had ulcerated. Tubercle bacilli were also found in sections of the caseous bronchial glands.

On examining the brain the meninges were very hyperæmic; there was no actual exudation of inflammatory lymph, though here and there very minute greyish semi-translucent granules were seen scattered in the pia-arachnoid along the course of the vessels. On microscopic examination they were found to be very early miliary tubercles, consisting for the most part of fusiform dilatations and cell infiltration of the lymphatic sheaths of the blood vessels.

Some were beginning to necrose, and in all examined tubercle bacilli were demonstrable.

Liver and spleen were enlarged, the former presenting markedly the appearances characteristic of cyanotic and nutmeg liver, the latter merely swollen and engorged, but in neither were tubercles visible *with the naked eye.*

The kidneys were slightly enlarged, both together weighing 11½ ozs. They were firm in consistence; the capsules were a little sticky in places, surfaces of a fawn colour and spotted with punctiform extravasations; here and there they presented opaque greyish dots of infiltration, about the size of a pin's head, or even larger, each of which was encircled by a zone of hyperæmia. Although none of them were found softened or breaking down, they look more like foci of infiltration, the result of capillary embolism, than tubercles, and the microscope confirmed this; for each spot was a minute focus of interstitial inflammatory cell infiltration containing both micrococci and bacilli, the latter larger than, and not staining like the tubercle bacillus. Their causation could only be referred to the small patch of ulcerative endocarditis found on the posterior segment of the mitral valve.

Let us once more turn to the lungs, portions of which were hardened in Muller's fluid and alchol for a subsequent and more complete and histological examination.

Sections were made both with the Swift-Williams' freezing microtome, and also, after imbedding in celloidin, with the Schanze microtome. Some were doubly stained with picrocarmine and hæmatoxylin, others were stained with carbolfuchsine for tubercle bacilli and counterstained with methylene blue. Under the microscope the miliary lesions, though present in immense numbers are mostly discrete in distribution; they are characterised by their small dimensions. On measurement, very few exceed the twenty-fifth of an inch in diameter (a millimeter), while the smallest are barely one-hundredth of an inch. On the average they measure from 0·02 to 0·03 inch (metric system 0·15 to 0·45 millimeter) each consists simply of a mass of proliferated cells, in the centre of which necrosis is in progress, and the outlines of the alveolar walls are indistinguishable. The necrotic part is composed of a homogenous or faintly fibrillated granular substance, in which are imbedded nuclei of all shapes and sizes together with a few disintegrating red blood cells. At the periphery, the alveolar walls become quite distinct, the individual cell forms of the intra-alveolar exudation are well defined, and consist mainly of—(*a*) Swollen and proliferating alveolar epithelium with large round or ovoid nuclei, staining well with hæmatoxylin; (*b*) exuded leucocytes with their characteristic deeply stained nucleoli; (*c*) extravasated red blood cells are also mixed up with the proliferating epithelium. In some alveoli, fibrin is present. The larger foci cover from four to six alveoli, the smaller are limited to even one or at most three. In these latter, the proliferation of the alveolar wall and its extension to the alveolar epithelium, the individual cells of which are collected into half or quarter moon-shaped masses, is quite conspicuous. In the intervening pulmonary parenchyma, cellular infiltration and thickenings of the alveolar walls are marked features. *Now in none of these miliary lesions are giant cells to be found*, and at the same time in none of them (*i.e.* in sections stained with fuchsine and methylene blue) are tubercle bacilli absent. In the larger foci where caseous necrosis is evident they are present in large numbers.

Besides the tubercle bacilli, other shorter and thicker bacilli, staining well with hæmatoxylin or methylene blue are found mostly within blood vessels, and immediately outside them. It is also noticeable that the tissue in their immediate vicinity looks necrotic or partially dead, for it stains very faintly.

What the significance of these bacilli may be, I cannot say definitely. Very probably they possess no pathogenic importance whatever, but are simply putrefactive or saprophytic organisms.

It should not be forgotten that the *post mortem* examination was made eighteen hours after death in warm weather. They resemble very closely the bacillus saprogenes No. 1 of Rosenbach* in possessing rounded ends. At all events they contrast conspicuously with the slender and ruby red stained tubercle bacilli.

Regarding the situation of the miliary lesions—(1) They are frequently disposed around small blood vessels, which, in some instances, are seen thrombosed and occupying the centre of the nodule; (2) they are also seen in the adventitia of the larger arteries and growing from the interlobular septa; (3) lastly, they may be found sprouting from the walls of the alveoli.

The points then of special interest in this case are:—

First, its unusually complex character, viz, a combination of mitral stenosis, miliary tuberculosis, and uncerative endocarditis. Tubercular lesions occurring in heart disease are rare events; in fact it is generally laid down that heart disease, particularly mitral stenosis, induces a condition of lung that is quite unfavourable for the development of tubercular or phthisical processes.

I can call to mind only two other cases where mitral stenosis was associated with pulmonary tubercular phthisis and cavity formation, though in neither was the stenosis so marked as in this one.

Secondly, the latent character of the tubercular disease in the caseous bronchial glands is another noteworthy feature. It is possible that this patient at some period in her life was the subject of tubercular disease which had cleared up in the lungs, but was arrested in the bronchial glands, where it was latent and smouldering, to become reignited when her general powers of resistance had run down from the effects of hard work combined with other morbid conditions. Unfortunately no information could be obtained to explain the mitral stenosis, whether it was rheumatic or congenital in its origin. At all events, had this patient come before us a year or so previously we should in all probability have diagnosed her cardiac affection; but who would have ventured an opinion as to the existence of tubercular disease other than a negative one? The case, I think, has an important bearing upon the new method of treating tubercular disease by the injection of tuberculin, especially so in reference to cases that neither outwardly nor inwardly, according to all our methods of physical diagnosis, shew evidence of tubercular disease and yet exhibit a general febrile reaction after injections of the lymph. It likewise suggests a search through *post mortem* records for similar cases of latent tubercular disease; for any information that could be thus collected would be of value in reference to Koch's method of treatment.

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* Mikro-organismen bei den Wundinfections Krankheiten des Menschen. Wiesbaden, 1884.

Lastly, the histological characters of the miliary lesions deserve special mention. From a clinical and practical point of view we had here an undoubted case of acute miliary tubercle of the lung, distinctly hæmatogenous in origin, and yet the lesions presented no trace whatever of giant cells and a reticulated structure, on which some authorities insist as essential for the pathological diagnosis of tubercle. It affords strong support to the views of Buhl, Hering and Klein, and demonstrates, at all events, that acute miliary tubercle of the lung in one of its manifestations may assume the form of a pneumonia. In fact the designation acute miliary tubercular pneumonia seems to be a more appropriate one to this case. It is quite possible, however, as Klein suggests, that had the case not run so acute a course we might have met with examples of the reticular giant-celled structure. I must regret that I unfortunately omitted to examine the endocarditic lesions of the valves for micro-organisms and for the tubercle bacillus, so as to have made the case more complete.

The next case, though undoubtedly acute in character, was of longer duration, and the tubercles had undergone modifications of structure which I shall describe after giving you an epitome of the history and symptoms. Old caseous foci existed also here in the bronchial glands and in the spleen. Two clinical facts worthy of notice are—(1) the marked symptoms and signs of pulmonary mischief on admission; (2) and the subsequent manifestation of symptoms of meningitis shortly before death

A. W., a boy nine years of age, with no history of consumption in the family, all the members living and healthy, had been at home eight weeks suffering with pains in both sides of the chest, cough, night sweats, and rapid emaciation. Except small-pox five years ago he had no previous illness. On admission there was a marked hectic flush on the cheeks, Temp. 103, Pulse 132, R. 36. Large moist râles were heard all over the chest on both sides; at the left apex and on the right side behind over the scapula region the percussion resonance was deficient, vocal resonance increased, breath sounds were harsh, and expiration prolonged. During the first week the pain in the chest, cough and night sweats, continued without abatement; the temperature curve was very irregular, varying between 99° and 101° in the morning to 103° and 104° in the evening. On the sixth day he had a convulsive seizure accompanied by a fall in the temperature and twitchings of the right arm. The last two nights he became unconscious and delirious, screaming out loudly at intervals. Bowels constipated throughout. Death occurred in the tenth week from the commencement of the illness.

Necropsy.—Miliary tubercles scattered in the pia-arachnoid along the course of the vessels, but unaccompanied with any exudation of much inflammatory lymph.

The lungs weighed together 36 ozs. Both stuffed throughout with soft grey tubercles. The disease is much more advanced in the superior lobes where the tubercles are closely set, coalescent, opaque, yellow and caseating, and the intervening pulmonary texture seems to be the seat of much recent catarrhal pneumonia. Such portions sink in water. In the lower lobes, the tubercular infiltration is more discrete, and the tubercles are greyish, translucent, and shew no signs of caseation. Such portions float in water. Bronchial glands enlarged and caseous Spleen 4 ozs. Two old caseous nodules imbedded in its substance. The rest of the organ everywhere infiltrated with closely set grey translucent tubercles. The appearances on section somewhat resembled those of sago grains imbedded on the substance (sago or amyloid spleen on a smaller pattern.) Numerous miliary tubercles in the liver and kidneys, and a few early ones in the mucous membrane of lower part of ileum, but no ulceration.

Regarding the microscopic appearances of the tubercles in the lungs:—

They are uniformly rounded or ovoid in shape and well defined, all are considerably larger than those in the previous case. Measuring never less than 0·03 inch, and on the average 0·05 to 0·07 inch in diameter. All the larger ones present an extensive caseous centre, which, in some instances, has fallen out in the preparation of the specimen, thus leaving a microscopic cavity. This caseous centre is composed of an amorphous granular débris, together with disintegrating nuclei stained deeply with hæmatoxylin, it is in all cases limited by a zone of proliferating connective tissue, rich in cells and nuclei; the latter being for the most part large, oval or fusiform, and vesicular.

In none of the tubercles can any trace of the alveolar structure of the lung be distinguished.

In this, as in the first case, the tubercular process is acute in character and probably the result of bacillary emboli in small blood vessels and capillaries. It has commenced in the walls of the infundibula or bronchioles as an inflammatory proliferative process, extending peripherally. The interior of the infundibula (or alveolar ducts) and of the bronchioles has become blocked by a cellular exudation that has undergone a rapid necrosis, and thus in the larger tubercles the central caseous necrotic mass corresponds to the lumen of such an infundibulum, while the peripheral zone represents the wall greatly thickened and altered by the cell proliferation. Many of the oval or spindle shaped nuclei are the offspring of the nuclei of the connective tissue and muscle cells normally found in the walls of the bronchioles and infundibula.

The walls of the intervening pulmonary alveoli are much thickened by small celled infiltration and the interior filled by large proliferating epithelial cells (alveolar epithelium). Tubercle bacilli are seen in great profusion both in the tubercles and also in the contiguous alveoli amongst the cells.

Indication of giant cells or imperfectly developed forms of them are found *only in the smaller non-caseating tubercles,* in the larger ones they are entirely absent.

In some instances, the tubercles are seen distinctly growing in the adventitia of a small blood vessel, or at the borders of the interlobular septa.

This case presents to us a more advanced stage in the development of the process than in the first one.

The remaining affected viscera were examined microscopically for tubercles and tubercle bacilli with confirmatory results.

The next group is, so far as my own experience goes, a small one, of which I will shew you specimens from two typical examples. Both lungs were uniformily affected. Here the miliary tubercles, which are primary, conform as regards their minute anatomy to the classical descriptions of Schüppel, Hamilton and others in presenting the giant celled reticular structure.

They were found to be small, firm, greyish, semi-translucent nodules, exhibiting to the naked eye but little tendency to caseation, and disseminated both in an isolated form, as well as in small racemose groups consisting of from three to five individual tubercles that had become confluent. The pulmonary texture appeared to be little if at all altered by other associated morbid changes. Microscopically, the tubercles measure from 0·02 to 0·03 inch, seldom exceeding the latter in diameter. Each is made up of several "giant celled systems" grouped around a *small* caseous centre. The peripheral adenoid reticulum or sheath surrounding each entire nodule is well defined.

From an examination of sections I have recently made of the lungs of these cases, pieces of which I found among my collection of material preserved for histological purposes, tubercle bacilli are demonstrable in some, but not in all the tubercles, and are not anything like so profuse in distribution as in the first two cases described.

The bronchial glands were enlarged, caseous, but also infiltrated with the miliary lesions.

Clinically, these cases were examples of a primary chronic tuberculosis of the peritoneum and abdominal lymph glands, tabes mesenterica, with tubercular ulceration of the intestine; and a general tuberculosis, ***more of a subacute type*** had developed and become engrafted upon the primary affection, for recent miliary tubercles were found in the peritoneal coat of the intestines.

Tubercular meningitis occurred in both, and in one a small caseous mass was found in the substance of the left temporo-sphenoidal lobe of the brain. The tubercular eruption in the meninges was accompanied with an abundant exudation of inflammatory lymph, so that the help of the microscope was necessary in order to detect the tubercles.

So far as concerns the history of these cases, I have only a few notes by me. Both occurred in children under ten years of age; and they came under my observation some years ago at the Leeds Workhouse Infirmary, where they were under treatment for three or four months. The symptoms were at first those of the local affection, viz. :—Swelling, pain and tenderness of the abdomen; pyrexia of a sub-febrile and irregular hectic type; night sweats; profuse diarrhœa and emaciation. The termination was somewhat abrupt, with the development of the meningitis, ***but the pulmonary physical signs throughout were mostly of a negative character.***

In these cases the origin of the tubercles in the lungs may have been partly hæmatogenous and embolic, but the differentiation of their structure was the result of slower growth and development; and thus it is possible that some of them spread by way of the lymphatics.

The last group of the series of cases of acute pulmonary miliary tuberculosis includes a small number where the organs first attacked by tubercular disease were the lungs themselves. They thus differ from the others etiologically, in the fact that the disease was not, so far as could be determined, traceable to some pre-existing focus in another part of the body, whence it spread by way of the vascular or lymphatic channels to the lungs; but the tuberculization of the system generally was secondary to the pulmonary affection.

Clinically, the cases present to us an acute form of pulmonary, developing into a general tuberculosis, and running a fairly rapid course from the commencement. The subjects of the disease were mostly children from five to ten years of age, admitted quite in the early stages of the illness, and under observation from seven to eight weeks. In three cases no history of phthisis in the family or of previous illness in the patient was obtainable; but one of them came from a house where the mother was reported to have died of typhoid fever five weeks before The child had been ill at home for nine days with diarrhœa, and for the first fortnight after admission into the Hospital his illness simulated typhoid, diarrhœa remaining a prominent symptom throughout.

In the fourth case the patient had only just recovered from an attack of measles, and there was a family history of phthisis. In all, the local signs and symptoms of the pulmonary mischief were evident from the first, viz.:—Troublesome cough without expectoration; pain in the chest; rapid breathing; inequality and impairment of the percussion resonance amounting in some parts almost to dulness; harsh breathing accompanied with moist crepitations and exaggerated expiration almost bronchial in character.

In two of the cases a temporary abatement of the local and general symptoms was observed, followed, however, by a marked exacerbation and the development about the fifth or sixth week of meningitis; that was the cause of the fatal termination in all the cases.

Post mortem the lungs were found stuffed with soft grey tubercles, all of which, even the isolated ones, were specially noted as being larger than the usual grey miliary variety. The *post mortem* in two cases says—"But the individual tubercles are of rather large size, much more so than millet seeds, or the size of disseminated grey granulations usually seen. Many are as large as a No. 3 shot corn."

The disease was more advanced in the superior and the upper part of the inferior lobes, where the tubercular infiltration was more confluent; and the tubercles were becoming yellow caseous, and even breaking down in the centre into small cavities filled with a greenish yellow pus containing tubercle bacilli in considerable numbers.

Miliary tubercles were found in the meninges, in the liver, spleen, and kidneys. The condition of the intestine varied. In one case (an adult) there was distinct ulceration; in the child with diarrhœa just mentioned, there was no ulceration, but swelling of Peyer's patches and the solitary follicles. In the other cases the intestines had escaped.

In none were the bronchial or abdominal lymphatic glands caseous. They were enlarged and infiltrated with tubercles not older in appearance than those elsewhere.

In fact no distinct caseous focus was anywhere discoverable in these cases.

Histological examination of the lungs shewed that the tubercles in all cases were nodules of tubercular or caseous bronchitis and peribronchitis, such as we shall find to be the predominating lesion in, and describe more fully when considering tubercular phthisis.

Many of the larger nodules (even in the lung of a young child of 5 years) measured from one-tenth to one-eighth of an inch in diameter. The smaller ones involving the bronchioles or alveolar passages were about half the size.

Giant cells were found only in the cellular thickening around the extensive caseous centres.

This concludes the description of the pulmonary lesions in the series of cases *that, from a clinical standpoint, were all of them examples of acute general tuberculosis.*

I have, I think, brought forward sufficient evidence even in my own cases, limited as they are in number, to shew that the lesions conform to no one particular type of structure, but undoubtedly present differences in their naked eye appearances and histological characters that depend upon certain modifying influences, of which the following may be enumerated as the most important:—

1. The peculiarities of the anatomical structure of the lungs.
2. The mode of origin and the spread of the tubercles; whether from one pre-existing tubercular focus by way of the lymph paths or vascular channels; or by direct and primary infection of the lungs along the respiratory tract.
3. The degree of the acuteness of the process, and the stage of development in which we happen to meet with the tubercles.

In reference to the first condition, while I do not wish to dispute the doctrine laid down by some pathologists that, *miliary tubercle always begins as a proliferative growth in connective tissue*, still, I would draw attention to the limited extent of this tissue in the alveolar walls The process has so little room for play, and its development is so rapid, that it quickly passes the boundary line, and at once exerts an irritative influence on the alveolar epithelium, which, as we have seen, takes no small share in the formation and spread of tubercles in the lung.

From a microscopic examination of some tubercles, it would be impossible to say how they had originated, whether within or without the alveolar wall. We must be guided by the processes that are going on in the alveoli between and around the tubercles. My own limited observations caution me against drawing any hard and fast line on this point, and also teach me to be on my guard lest any fallacy in histological description should creep in from one's imagination.

We have now to pass on to the consideration of the forms of miliary tuberculosis that are localised in the lung and run altogether a more chronic course, viz.:—

1. Partial disseminated miliary tubercle, and
2. Localized primary tuberculosis.

The first occurs more frequently in children than in adults. The lesion is not, like the acute miliary form, uniformly distributed in both lungs. Usually one lung is affected, and even in this the tubercles are by no means uniform in their distribution, but generally limited to a part of a lobe. The unaffected parts of the lung may look quite normal, or at most perhaps a little congested.

The arrangement of the tubercles is quite typical, they appear in the form of miliary or submiliary greyish granulations ***grouped around a relatively large caseous focus situated either in the lung parenchyma itself, or outside it, as, for example, in the bronchial glands.*** So far as my own experience is concerned, I do not remember to have seen more than one case where only one lung was affected, and it occurred in a child about three years of age that died from burns. There were two patches of caseous pneumonia, abutting on the pleural surface of the lower lobe of the left lung, and spreading from them, towards the central parts of the lung, a zone-like eruption of miliary tubercles. Those nearer the caseous pnemonic focus were more closely set, while those further away were scattered and more discrete. The bronchial glands corresponding to the lung were caseous and a few tubercles were found in the upper lobe. The right lung was congested, the result of the burns, but was quite free from tubercular disease. On the other hand, I have pretty frequently met with a caseous pneumonia, pretty extensive in one lung, and found in the other lung a combination of lobular caseous pneumonia with miliary tubercle. Such cases lead us at once into the domain of pulmonary phthisis.

So also the second variety—localised primary tubercle of the lung—which is an example of a primary tubercular process occurring in the lung and spreading mostly along the ramifications of the smaller bronchi; it represents one variety of tubercular phthisis. It is seldom met with in this pure form, but more often associated with other morbid changes, and I will therefore defer its consideration to the next lecture on Tubercular Pulmonary Phthisis.

REPORTS OF CASES.

BIRMINGHAM WORKHOUSE INFIRMARY.

CASES UNDER THE CARE OF DR. SUCKLING;
REPORTED BY B. F. JORDAN, M.B.,
CLINICAL ASSISTANT TO THE INFIRMARY.

Jaundice due to obstruction of the common Bile duct by Cancer of the head of the Pancreas.

A woman, aged 86, was admitted to the Infirmary, on April 28th, 1891. Her illness began last Christmas with slight attacks of pain across the lower part of the abdomen. These attacks had no relation to the taking of food. From the onset of her illness up to the time of her admission to the Infirmary the patient had occasional vomiting and diarrhœa, both of which were slight in character and unaccompanied by hæmatemesis or melæna; and during the whole period she never complained, either of pain after food, suggestive of gastric mischief, or of attacks of acute colicky pain, suggestive of the passage of gall stones.

For two months before coming under observation, constipation was a prominent symptom, medicine alone procuring any action of the bowels. Progressive emaciation was a marked feature throughout the whole history of the case.

On admission, slight jaundice, not noticed by the patient, emaciation and slight general enlargement of the liver were noted, and a large hard swelling, moveable on respiration, was felt in the situation of the gall bladder. Over this swelling there was no pain and no tenderness.

After admission, the case ran a rapid course. From time to time there was vomiting, principally of undigested food. The vomit never contained blood. The jaundice rapidly and steadily deepened. The bowels were kept open by enemas, and the stools were dry and slate coloured. Pain was not complained of until a few days before death, when acute lancinating pain came on in the right hypochondriac region, only to be relieved by opium and hypodermic injection of morphine. Death was gradual from exhaustion on the 20th May.

The diagnosis made was that of malignant disease of the liver; a diagnosis based on the advanced age of the patient, the rapid emaciation, the obstinate jaundice, and the presence of a hard swelling moving with respiration and located in the situation of the gall bladder.

At the autopsy bile-staining was general and deep. There was slight general enlargement of the liver, due to biliary congestion. On the upper surface of the right lobe, near the anterior edge, there were two small cancer nodules, circular in outline, dipping into the liver substance for about an inch, not raised above the surface, and having a small central depression. These nodules did not cause any hepatic obstruction, could not be felt during life, and in all probability were the products of local infection from the pancreatic growth. The head of the pancreas was practically converted into a hard round mass about the size of a tomato, a mass adherent to the middle portion of the duodenum without obstructing it, and producing obstruction of the common bile duct as it passed between the pancreas and the duodenum to open into the latter. The growth extended upwards and to the right towards the liver, and by being fixed to the small omentum had probably obtained that movement with respiration, the origin of which had been put down to the growth being situated in the liver. There were no other cancer deposits in the body. The gall bladder was moderately dilated and contained about 2 ozs. of bile. Dry pale fæcal masses were scattered throughout the intestines.

Carcinoma of the pancreas is by no means rare, several cases having been met with at the Infirmary during the past two or three years. The diagnosis is usually simple, but when the liver is secondarily involved, the pancreatic disease may be overlooked. The following symptoms are usually present, and enable a diagnosis of malignant disease of the pancreas to be easily made:—(1) Progressive asthenia and cachexia; (2) Obstructive jaundice; (3) Distension of the gall bladder; (4) The presence of sugar in the urine.

The liver is usually not enlarged, but there may be (as in this case) secondary growths in it. In one case a calculus was found in the pancreatic duct, which possibly started the malignant growth, just as the presence of gall stones is often associated with carcinoma of the gall bladder and liver, and in this case pain in the back was intense and persistent.

Right Hemiplegia from Cerebral Thrombosis complicating Pneumonia.

A girl, aged 18, was admitted to the Infirmary on May 23rd. She had been ill for ten days, and when seen dyspnœa, cough, pain in the left side, and pyrexia were present. Pneumonia of the left base was diagnosed. For three days the temperature kept between 101° and 102°. On the 4th day the temperature fell to normal, and on this day left ear-ache unaccompanied by discharge appeared On the next day the temperature began to rise again, and during the night the patient was discovered in a comatose condition. Unconsciousness was not complete, for the patient looked up when loudly spoken to and moved her tongue when told to put it out. The pupils were dilated, and there was some degree of photophobia, but no ocular paralysis. The pulse was small, quick, and feeble. During the day the patient became quite unconscious, and in the evening paralysis of the right arm and leg was detected. The patient died on May 30th, having been unconscious for twenty-four hours. Thrombosis of the middle cerebral artery was diagnosed.

At the autopsy there was found thrombosis of the basilar artery, the left half of the circle of Willis, and the deep and superficial arteries of the left hemisphere. No emboli were detected, and there was no clotting in the large venous sinuses. The left hemisphere seemed softer in consistence than that of the right side. The left lung contained four purple-coloured, non-suppurating, wedge-shaped infarcts near the surface of the upper and lower lobes. These were embedded in pneumonic consolidation which had a well-defined upper and lower limit, reaching above half way up the upper lobe and below to within half an inch of the base. The right lung contained two small infarcts near the surface of the lower lobe, but there was very little pneumonia. In both lungs some of the larger branches of the pulmonary artery contained clots. In the right ventricle and auricle there was some loose, firm, pale, *ante mortem* clot. There was no valvular lesion. Two wedge-shaped infarcts were found near the surface of the spleen.

The tip of the vermiform appendix was adherent to the peritoneum, was inflamed, and contained two or three drops of pus. This condition of the vermiform appendix could not be regarded as the source of the embolic infarction of the viscera or the thrombosis in the cerebral arteries, for there was neither cerebral suppuration nor any breaking down of the spleen and lung infarcts. There was also no infarction of the liver.

Dr. Suckling has several times met with severe ear-ache in pneumonia, usually on the side of the inflamed lung. As a rule, it occurs early in the disease, sometimes before the physical signs of pneumonia are developed. The causation of this pain is interesting and explained anatomically by the existence of an auricular branch of the vagus nerve. The occurrence of thrombosis of the cerebral arteries preceded by severe ear-ache on the same side, shews that the symptom is an important one. The extension of the clot down the basilar artery explained the supervention of coma and death. The infarcts in the lungs were caused by fragments derived from the clots in the right auricle and ventricle. The average number of cases of lobar pneumonia met with at the Infirmary is about 100 annually. This is the first case of hemiplegia met with out of about 1,000 cases of pneumonia.

Scorbutus.—A man, aged 36, a clerk by occupation, was admitted into the Infirmary last October suffering from debility and scabies. Soon after admission he developed a sloughing sore on the inner side of the left cheek, and his gums became soft and spongy. Under treatment the stomatitis disappeared, and before Christmas he was discharged. From the time of his discharge to his re-admission on the 28th May, 1891, he had food both insufficient in quantity and entirely wanting either in potatoes or in green vegetables. In January his ankle and big toe joints swelled up, to be followed a week later by swelling of the knee joints. This joint swelling was attended with pain, aching in character, but with little tenderness and no discolouration of the skin. He remained in this condition until the middle of April, when the skin over the front of his legs began to smart and to turn purple-red in colour. This change was quickly followed by still further effusion into the knee and ankle joints, and by puffing of the back of the hands. About this time also his gums became sore but not spongy, and no ulcer formed in the mouth.

On admission the patient was found to be very anæmic and debilitated. There was slight effusion into the elbow joints, and some hæmorrhagic staining on their anterior aspects. The backs of the hands were a little puffed, but did not pit on pressure. The fronts of the legs were covered with a patchy purpuric rash. Tingling and burning of the affected area was occasionally present. The knee and ankle joints were distended with a chronic fluid effusion, probably a blood stained serum in nature. The pulse was 108, weak, small, and easily compressed. There were no organic cardiac murmurs audible. On estimating the number of blood corpuscles by Gowers' Hæmatocytometer, there were found to be only 1,290,000 red corpuscles instead of 5,000,000 in the cubic millimetre of blood. There was no increase in the number of white corpuscles. The discs and fundus were pale.

Scurvy is frequently met with at the Infirmary and in every case a clear history of deficiency in vegetable diet can be obtained. Many poor labourers seem to live chiefly on bread and bacon with alcohol Retinal hæmorrhages are present in nearly all cases. A milk diet with lime juice and mashed potatoes is given. For drugs, quinine and iron, and the gums are painted with glycerine of tannic acid.

A case of Aneurismal pressure on the right pulmonary artery and right bronchus with Tubercular deposit in the right lung.

A man, aged 51, a porter, was admitted into the Infirmary, on March 18, 1891, complaining of præcordial pain and some dyspnœa. A swelling could be seen and felt in the 2nd left intercostal space, over which swelling expansile pulsation could be felt, and a systolic bruit heard. The first sound of the heart was reduplicated at the base, and the aortic second sound was accentuated. The pupils were equal, but the right radial pulse was rather less than the left. There was no dysphagia and no tracheal stridor. On examining the lungs, harsh breathing was detected in the right suprascapular fossa, but no crepitations were heard. From admission, up to time of death, temp. varied from about normal to 101°, and the symptoms generally were those of chronic lung disease, rather than of acute aneurismal mischief. Death took place slowly from exhaustion on June 15th.

At the autopsy, it was found that the heart, so far from being enlarged, was rather smaller than natural. There was no valvular lesion and no hypertrophy of the left ventricle. The ascending and the first part of the transverse portion of the aortic arch were expanded into a fusiform aneurism, presenting on its posterior aspect a small saccular dilatation which was filled with a hard, firm, beautifully laminated clot. The wall of the sac was so thin that it had torn through in one place exposing the clot. The saccular dilatation from the general fusiform aneurism was found to cause considerable obstruction to lung circulation by pressure on the right pulmonary artery, and to some extent on the pulmonary vein. There was also some pressure on the right bronchus. The right lung was solid throughout from consolidation around extensive deposits of miliary tubercle, and the right pleural sac was studded with a similar deposit. The left lung was a little congested and œdematous, but contained no tubercle, nor was any deposit found in the other organs of the body.

It is well known that pressure on the root of the lung obstructing the bronchus leads to a destructive pneumonia of the corresponding lung. This pneumonic consolidation breaks down and cavities form. The consolidation is an important symptom of intra-thoracic aneurism, and useful not only in diagnosis, but also in localisation. If a branch of the bronchus is compressed and not the main trunk, then the pneumonia affects one lobe only; if the whole bronchus is compressed, the whole lung is affected. In the above case pressure on the bronchus and blood vessels led to miliary tuberculosis limited to the affected lung.

Many sufferers from intra-thoracic aneurism are killed by this destructive pneumonia.

Malignant Growth in the Mediastinum.—

A man, aged 31, was admitted to the Infirmary on May 26th, 1891. Bad dyspnœa, spasmodic cough, profuse expectoration, tracheal stridor, and marked venous congestion of the face and neck were the most prominent symptoms. His illness began a week before Christmas with catarrhal symptoms, viz., coughing and sneezing. In two weeks his right forearm suddenly swelled up, and a week later the left hand also swelled. These swellings soon subsided. Six weeks later he went to the General Hospital, and on his journey there first complained of dyspnœa. He left the hospital in a week and attempted to look after his workshop for a short time. He was very soon forced to stop working, and at the beginning of May his dyspnœa became suddenly so much worse that in a few days he took to his bed. Since his illness began patient has lost two stones in weight.

On admission he presented a suffused, anxious, semi-strangulated expression. His neck and face were swollen and œdematous, his eyes were puffy looking, and the tips of his ears and nose were blue. He sat up in bed with respiration slightly quickened and laboured, and accompanied by inspiratory stridor. He had a troublesome spasmodic cough and spat up a large quantity of thin red brown sputum containing dirty nummulated masses. Liquids and greasy solids were swallowed with ease, but he was unable to swallow bread owing to its irritative dryness. His voice was low and husky. On examination the superficial veins of the chest were found to be enlarged, and a large area of percussion dulness, being mainly under the first part of the sternum, was detected. The upper limit of this area was practically the upper edge of the sternum, its lower limit the upper border of the third costal cartilages and a line across the sternum joining them, and the growth extended laterally one inch outside the sternum on the right and half an inch on the left side. Marked vocal fremitus was felt and loud tracheal respiration heard over this area. No pulsation and no bruit could be detected. One or two enlarged glands were felt deep in each supra-clavicular fossa and axilla. The cardiac apex beat was felt in the nipple line and in the sixth interspace. At the back and front of both lung apices the breath sounds were harsh, and this quality was more marked at the right than at the left apex. The breath sounds at both bases were feeble and distant. There was no area of interscapular dulness. No paralysis of the vocal cords could be detected by the laryngoscope.

The case ran a very rapid course and but little was gained from the use of antispasmodics and counter-irritants. Death occurred rather suddenly on May 9th.

The diagnosis made was one of malignant growth in the mediastinum. The rapid onset of symptoms—dating only from Christmas, the extensive area of substernal and subcostal dulness, the complete absence of pulsation and bruit over that area and the easy conduction of tracheal and lung sounds to its surface, the presence of enlarged glands in the neck and axillæ, the rapid loss of flesh and the steady aggravation of the symptoms, all pointed to a diagnosis of malignant disease; and this diagnosis was fully confirmed at the *post mortem* examination.

On opening the thorax, a firm solid mass was found reaching from the base of the heart to the upper edge of the sternum, and bulging forwards so as to separate by nearly four inches the anterior edges of the lungs at the level of the 2nd costal cartilages. A preliminary incision into the mass in situ shewed it to be mainly solid, cutting like a badly cooked potato, but here and there broken down into small collections of dirty coloured fluid. In depth the growth reached to the œsophagus enclosing the trachea, the bronchi, and the large thoracic blood vessels. On the right side it extended into the right lung forming the greater part of its apex, and from the apex it passed up under the clavicle, with the subclavian vessels and brachial plexus for its posterior relation, and enclosed the carotid sheath and its contents for nearly two inches. The growth was removed in one piece along with the larynx, trachea, bronchi, œsophagus, the upper lobe of the right lung, and the main blood vessels of the thorax. It was then found on slitting up the trachea, the œsophagus and the blood vessels, that there was (1) tracheitis and some stenosis of the trachea by the growth bulging into it just above the bifurcation of the bronchi, (2) inflammation and obstruction of the right bronchus, (3) perfect patency of the œsophagus, the mass lying on it but not involving it in any way, (4) patency of the aortic arch and its branches, the result probably of their elastic walls and the pressure of the blood stream within them, and (5) great narrowing of the superior vena cava, the innominate veins, and the lower part of the right internal jugular vein, their calibre being reduced to a small triangular chink.

There were a few secondary nodules in the left lung, and in both kidneys and the glands in the axillæ and above the clavicles were hard and enlarged.

A CASE OF CONSTIPATION AND MANIA.

UNDER THE CARE OF R. M. SIMON, M.D.,
PHYSICIAN TO THE GENERAL HOSPITAL, BIRMINGHAM.

Ellen V., æt. 36, married, and occupied solely at home, was admitted into the General Hospital, on March 2nd, 1891, on account of feeling very weak and ill, and with a history of nocturnal delirium. It appeared that she had been confined two weeks before Christmas, the child being still-born. Since then, though she had never felt well, she had only complained of being constipated. Her bowels had not been open for ten days before admission, and she suffered in consequence from a certain amount of abdominal pain. There was no family history of nervous disease, nor had she exhibited any mental symptoms, or, beyond some money worries, been troubled in any way.

On admission, she was unable to give any account of herself, rolled her eyes about, cried and laughed, and screamed when she was touched. Her temperature was 101·2°, her pulse 104, weak and regular. Her lips were dry, her tongue coated with darkish fur, but moist and very tremulous. The abdomen was prominent and tender on palpation, but beyond this, there was no abnormality to be detected in the thorax or abdomen.

The night of her admission she was very noisy, and as she disturbed the other patients was given a subcutaneous injection of morphia. This quieted her, but she did not sleep. The next day her temperature was 97°. Her general condition was the same as the day before; she rambled continuously and did not know her husband.

She was ordered a castor oil enema, and given ten grains of chloral with twenty of bromide of potassium, the dose to be repeated in four hours if necessary. During the day she was moved to a separate ward and a special nurse ordered.

March 4. Temperature in the morning, 97°, in the evening, 100°. Still in the same condition, takes her milk fairly well. Has slept only in snatches, and has been wildly delirious in the intervals. Bowels not yet open, despite another enema.

March 5. Morning temperature, 100°, evening temperature, 103·6°. She was very violent and noisy during the night, and had to be strapped down, but this morning is much quieter and more rational.

She does not complain of anything, and says she feels much better. The bowels were slightly moved once; another enema ordered.

March 6. Morning temperature, 103°, evening temperature, 102°. The patient passed an enormous motion filling the whole vessel; she is quieter, but feels about the same. The enema was repeated.

March 7. Morning temperature, 99°, evening temperature, 101°. Patient has passed another enormous motion. She is quite rational, but very feeble.

From this time she steadily improved, never relapsing into delirium, and slowly gaining strength. The bowels continued to act daily, and she was discharged on March 18th, quite well.

It might be possible to regard this case as one of acute mania coexisting with constipation, but such an explanation would give no hint as to the causation of the attack, nor would it account for the recovery of the patient in so short a space of time. She was very weak, but practically well on March 7th, five days after the commencement of illness.

The only treatment was the repeated administration of enemata, consisting of—Olive oil, ℥ii.; castor oil, ℥i.; soap and water, ℥x.; in addition, she had on one occasion, a subcutaneous injection of morphia, and on two others, doses of chloral and bromide of potassium. When one considers the irritability and discomfort ordinary people suffer from if the bowels are confined, it is not very difficult to understand how prolonged constipation, occurring in a woman who had not thoroughly regained her health after her confinement, and had had money troubles, might end in temporary disturbance of the mental equilibrium. By a swing of the pendulum the growing tendency has been to reject the *post hoc propter hoc* argument as inapplicable, unless a special connection can be demonstrated between symptoms and their supposed cause, and it may be argued, that while constipation is a common condition, mania as a sequence of it is very rare.

It would certainly be impossible to prove the connection in the case recorded here; but that such exists, is to my mind, a reasonable supposition, from the fact that a woman who is weak and worried, becomes first irritable and then violently maniacal, and finally, in a space of five days quite well, after her only physical disturbance, constipation of a fortnight's standing, had been relieved.

LABOUR COMPLICATED BY CYST OF LARGE SIZE IN VAGINA.

BY JOHN T. HARTILL, L.R.C.P.L., M.R.C.S. ENG, WILLENHALL.

The notes of the following case are so unique in my experience—although I have twice before delivered women with long forceps who had ovarian tumours *in* the pelvis—and so interesting that I venture to think them worthy of permanent record.

On June 24th, the wife of a miner, aged 31, who had had four previous confinements sent for my assistant to attend her in labour. He immediately sent for me. It was 3.30 in the afternoon, and she had been having strong pains for twelve hours, and had been more or less in pain for three days.

On examination, a cystic growth was felt high up *in* the vagina, very tense and apparently having a solid substance within it, and occupying a large part of the pelvis. Above this growth and above the pelvic brim the uterus was found fully dilated and the head presenting; the pains were strong and exerting great pressure on the cyst, and near the posterior lip of the uterus there was a small portion of a fleshy band thicker than my finger. I could find no rupture in the vagina, but nevertheless concluded there must be one somewhere, and that the whole orifice was filled with the cystic growth, part of which was within the pelvis and part out of reach above the brim, whilst the uterine pains were producing a sort of hour-glass contraction of the cyst by pressure from the head of the child.

Long forceps, craniotomy, Cæsarean section, tapping of the cyst, each in turn, passed through my mind, and in a few minutes I decided to attempt delivery with forceps having blades of ten inches from the lock, though doubting my ability to successfully deliver in any way.

With some little trouble the blades were locked, and then with great care I satisfied myself that the uterus was outside them, and that they did not grip the cyst or the fleshy band.

For some time it seemed that attempts to deliver would be futile, but presently the cystic tumour began to descend, and ultimately protruded externally having the fleshy band attached to it My assistant was then requested to make no traction, but to hold the cyst well backwards, and I was soon able to deliver the woman of a still-born well developed nine months' child and the placenta shortly after.

I then passed a small trocar into the cyst and finding it contained pus placed it in a soap-bowl, and took great care that none of the contents escaped into the vagina.

I then proceeded to examine its connections and found the fleshy band was apparently the uterine appendages. This was firmly tied with a silk ligature as far in the vagina as I could reach, and the tumour was cut off below the ligature.

On examination, the tumour had a circumference of 13½ ins., and within it was found attached to the cyst wall a piece of bone having several fair-sized teeth in it, all the centre was of the consistence of clotted Devonshire cream laden with hair, and on the outside of this there was thick healthy-looking pus. I made no attempt to examine the woman again per vaginam, but directed the vagina to be washed out each day with Condy's Fluid and warm water from a Higginson syringe. At midnight the pulse was accelerated, temperature 101 Fah., there was some delirium and she vomited three or four times.

Next morning the pulse was 72, and the temperature under 99, and from that time forward the pulse remained at 72, the temperature was practically normal and there was no vomiting.

A week later I could not find the pedicle, but there was a V-shaped rent in the vagina not quite large enough to admit two fingers, apparently due to the separation of the vagina from the posterior wall of the cervix uteri. The tumour must have descended in close contact with the uterus, and the force of the uterine pains must have been directed on to it sufficiently to tear the vagina from the uterus.

A week later still the wound had not healed, but just within it there was something hard which may have been the pedicle.

There is no doubt that after the tumour was removed, the pedicle shrank and was retracted through the rent.

July 22nd. The woman is hearty. Injections of Condy's fluid continued Vaginal discharges scanty with no admixture of blood. The rent has not perfectly healed yet. It probably will in time by granulation. The rent makes drainage efficient. Permission given to sit up in bed, if it cause no distress.

Previous History.—Had had more or less pain in right groin from last confinement 4¼ years ago, sometimes had to walk with her hand on the groin to relieve pain. Had consulted no doctor in that time and had not kept her bed. Occasional night-sweats, but nothing profuse. Pain increased during pregnancy, especially the latter part—nevertheless gained flesh. Previous labours lingering, presentations normal, no instrumental assistance.

FAILURE OF THE ABDUCTORS OF THE VOCAL CORDS.

UNDER THE CARE OF GILBERT BARLING, F.R.C.S.,
SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

Bilateral failure of the Abductors of the Vocal Cords; Hysterical (?) Tracheotomy with improvement and subsequent relapse. Tracheotomy a second time.

L. J., aged 19 years, was admitted to the General Hospital, on March 26, 1890, complaining of difficulty of breathing. For four years she had suffered occasionally from hoarseness and loss of voice, but never from shortness of breath until a year previous to admission, when she was seized with giddiness and shortness of breath whilst performing some domestic duties. She was confined to her bed and under treatment, at the end of two months, got well and remained so for some months. In September, 1889, a fresh attack of difficult breathing arose, which was treated as before by painting of iodine over the larynx, rest in one room and inhalations, but without relief up to the time of her admission. During these last two seizures she did not suffer from hoarseness or loss of voice.

When admitted, the patient, a well-nourished, fresh coloured girl, breathed quickly, with short inspirations, which became more rapid on exertion, her voice was clear and there was only slight recession of the thoracic walls; but there was considerable inspiratory stridor and lividity on exertion. The respirations when the patient was quiet and asleep, varied from 44 to 50, and on slight exertion increased to 54 or 56. Examination with the laryngoscope shewed a little redness and œdema over the arytænoids and their immediate neighbourhood; the cords closed accurately on phonation, and on quiet inspiration the utmost interval was barely one-sixth of an inch, whilst in deep inspiration this was somewhat diminished. Repeated inspection always shewed the same conditions, except that the mucous membrane over the arytænoids became more healthy. There was no evidence of any disease in the thorax or in the neck, such as might interfere with the recurrent laryngeal nerves, nor was there any other paralysis.

Strychnia was administered for a fortnight without any benefit, and as severe dyspnœa had occurred at night on several occasions, tracheotomy was performed on April 17th, and on the 29th the Faradic current was applied over the recurrent laryngeal nerves, this being repeated daily.

Examination with the laryngoscope on May 10th, for the first time after the operation, shewed marked improvement in the power of abduction, the separation of the cords being now nearly one-third of an inch at the widest part, there was also a slight general laryngitis.

May 20th, on examining with the tracheotomy tube out, in quiet respiration the abduction of the cords was quite normal, though at the first view it seemed as if the abductor muscles were rather indecisive in their movements. On deep inspiration there was still a distinct tendency to approximation of the cords.

A week later, the respirations being from 18 to 20 in the minute, and the abduction of the cords good, the tracheotomy tube was left out. Almost immediately the respirations began to quicken, and in a few days were almost as rapid as when the patient was admitted, and abduction was as imperfect as ever. The Faradic current was again resorted to, and used of such strength as to cause actual pain; at the same time the patient was exercised frequently by the nurse in slow breathing, whilst it was intimated that cold douching would be resorted to if there were no improvement. Steadily, the rapidity of breathing diminished until, at the time of the patient's discharge in June, the respirations were hardly more frequent than normal, and abduction was good. Soon after leaving hospital the quick breathing returned, and at the beginning of 1891, the patient was re-admitted in the same condition as at first, and with abduction of the cords just as imperfect. The Faradic current was used to the neck and the larynx was intubated two or three times a week for a brief period, but at the end of many weeks, there being no permanent improvement, tracheotomy was performed a second time. As before, this was followed by improved abductor power, but plugging the tube or removing it again disturbed this function; the girl is therefore discharged with her tube in to return for inspection some months later.

This case is a curious one. The failure of abduction was verified by several observers besides myself, and of the genuineness of the dyspnœal attacks at night there is no doubt. In the absence of any lesion to explain the failure of abductor power, and from the remarkable fluctuations in the amount of abduction, one cannot but feel that the condition was a functional one and would be termed hysterical. It is extremely likely that it supervened, as many hysterical conditions do, on a real lesion, a catarrhal laryngitis, of which evidence existed. Although I think it extremely unlikely that she would have suffocated in one of her dyspnœal attacks, I yet felt justified in giving relief by what may prove to be a permanent tracheotomy tube. The blueness of the girl's surface on exertion, and her own feelings of anxiety shewed that her blood aeration was very imperfectly carried out and quite incapacitated her from anything laborious, though she always appeared anxious to work, and she is dependent on her own exertions for a living.

PERFORATING GASTRIC ULCER.

UNDER THE CARE OF R. M. SIMON, M.D., AND GILBERT BARLING, F.R.C.S.

Perforating Gastric Ulcer; Acute Peritonitis; Abdominal Section and Drainage. Autopsy.

A girl aged 22 was admitted to the General Hospital July 16th, 1891, in the afternoon. Before noon on that day she was in her usual health, and at that time, stooping down to pick up something from the floor, she was suddenly seized with violent pain in the lower part of the abdomen, was unable to stand upright, felt very faint, and after drinking some brandy vomited. The pains and vomiting continued until admission. The patient had breakfasted at 8.30 a.m. on bread and butter; the bowels had acted at 10.30 a.m.; the period was due in a few days. The previous history shewed that she had never been very robust but had been in her usual health until her present attack, except that for the past fortnight she had suffered from "the wind."

When admitted the girl seemed considerably, though not extremely, collapsed; her face was white, expression anxious, respiration shallow and quick, pulse about 100, fairly full and compressible; vomiting. She lay on her back with her knees drawn up, complaining of shooting pains below the level of the umbilicus. On examining the abdomen there was no distension, the muscles were rigid, superficial palpation caused no pain, but any attempt at deep palpation shewed the presence of marked general tenderness, especially at the lower part, but no tumour could be felt. The vomit consisted of mucus with small quantities of food. The rectum contained some fæces. Two enemata were given but were retained. Two hours later the abdomen was a little distended, the pulse was harder and sharper; there appeared to be some ill-defined dulness in the left flank, the vomiting was quieter and was partly replaced by hiccough. The general appearance had altered a little for the worse.

Six hours after the sudden seizure the abdomen was opened in the middle line below the umbilicus, when a considerable quantity of thin sero-purulent fluid escaped, in all, probably from two to three pints; that in the pelvis was more distinctly purulent than elsewhere; but there were no particles of food or fæces anywhere. A careful examination was made of the abdominal cavity; the small intestine, everywhere covered with a thin layer of adherent lymph, was brought up to the wound and inspected, so also were the tubes and ovaries, which were sodden and lymph-covered but otherwise healthy; the whole of the large intestine, including the neighbourhood of the appendix, was healthy, there was nothing in Douglas' pouch. The only abnormal condition noted, beyond the intense peritonitis, was enlargement of a chain of glands in the mesentery, but these did not appear to be softened. As no cause appeared for the peritonitis, and the girl had been on the operating table for fully half an hour and was becoming more depressed, the cavity was thoroughly washed out and a glass drain inserted into the pelvis.

After the operation only sufficient fluid was given by the mouth to moisten the tongue; a saline purgative was administered, also another enema with turpentine, but no action of the bowels took place, and the patient steadily went down hill until her death twenty-four hours after the operation.

The autopsy shewed a perforating gastric ulcer, circular, one-third of an inch in diameter, situated on the anterior wall of the stomach rather nearer to the cardiac than to the pyloric end. The enlarged glands felt at the operation were in the mesentery of the small intestine and appeared to be calcified tubercle.

There are some points in this case worthy of comment. The entire absence of symptoms of gastric ulcer put the possibility of perforating ulcer of the stomach apparently quite out of consideration. Not finding any cause for the peritonitis, the question arises whether the abdomen should have been more extensively opened up and further search made; the answer is that the condition of the patient was such as to forbid any more prolonged manipulations than those performed. The advanced and intense peritonitis produced in such a short time as six hours is worthy of note. Lastly, it would appear that if any case of perforating gastric ulcer could be dealt with successfully, this was the one, both from the position and the extent of the ulcer.

PERISCOPE.

THE SURGERY OF THE GENITO-URINARY TRACT.

BY GILBERT BARLING, B.S., F.R.C.S.

Rupture of the Rectum by Petersen's bag during an attempt to perform suprapubic cystotomy.—Fowler (*Canadian Practitioner*, January 16, 1891.) The patient, a male, aged 63, had a history of vesical trouble of six years' duration, and the sound detected calculus matter either in the prostate or in the bladder; the prostate was considerably enlarged throughout. The rectal bag was injected with 8 ozs. of water, carefully measured, and the bladder with a similar quantity of fluid. When the incision in the middle line had reached the parietal peritoneum a black mass was recognised in the abdominal cavity, and upon opening the peritoneum this mass proved to be the rectal bag, which had burst through the rectum. It was observed that the patient, just prior to the opening of the peritoneal cavity, had exhibited signs of profound shock, this probably corresponded to the moment when the rectum gave way. The bag was drawn into the incision sufficiently to cleanse its exterior and after emptying its contents it was withdrawn, when a rent four inches long, the upper end of which reached the sigmoid flexure, was found in the anterior wall of the rectum. The abdominal cavity was thoroughly cleansed with water and an attempt made to suture the rent, but the insertion of Lembert's suture at the lower margins was found impossible; an artificial anus was therefore established by suturing the edges of the tear to the lower angle of the incision. Even this was difficult, as the walls of the rectum were thinned and softened, and the stitches tore out though there was little tension on them. The patient died from shock in a few hours, and the *post-mortem* examination shewed the rectum to be softened, thinned, and weakened. Stress is laid upon the small quantity of fluid used, only 8 ozs., which is distinctly less than the amount generally used to distend the bag.

Suprapubic Cystotomy.—The *Medical News*, Philadelphia, of April 18, 1891, contains an account of several cases of supra-pubic cystotomy by Dr. Keen, amongst them one for Papilloma of the Bladder and one for Exploration of the Ureters. The first mentioned occurred in a male, aged 57, who had an attack of cystitis with blood in the urine five years before. Eighteen months before operation the first uncomplicated hæmorrhage took place, and ceased in two days, but broke out again in a fortnight. A third attack happened shortly afterwards and a very profuse one some fourteen months later, and this persisted despite the use of a variety of remedies, general and local. Repeated examination with the microscope failed to identify fragments of tumour, and a positive conclusion could not be drawn by the aid of the cystoscope owing to the persistent hæmorrhage. After the bladder was opened a tumour the size of the finger end was recognised near the right ureter, apparently sessile, and some tiny ones immediately around it. The tumour and its satellites with the mucous membrane adjacent was removed with curved scissors, the bleeding being very moderate. There was some difficulty in getting a good view of the growth *in situ*, and the operator states that both his own and Watson's vesical speculum had to be supplemented by forceps to push back the bladder wall. The patient recovered well.

The second case was one of hæmaturia the source of which was doubtful. The patient, a male, when 26 years of age, passed blood in his water without apparent cause, there being neither pain nor frequent micturition. With slight intervals the urine remained bloody, with occasional attacks of retention from clots for two years and a half, when, no cause appearing for the hæmorrhage, the bladder was explored by the boutonnière. The finger then discovered on the upper right wall posteriorly a soft velvety mass which was removed with forceps, and the nature of which was even then uncertain, whether clot or tumour. Eleven months later, the hæmaturia going on still, the bladder was examined with the cystoscope but nothing was made out, so the organ was then opened above the pubes. By the aid of a special extractor and the electric light the scar of the former operation on the right wall of the bladder was recognised and was found to be smooth and healthy. Between and above the orifices of the ureters was an ulcer barely a quarter of an inch in diameter, possibly tubercular, though no bacilli could be discovered in the tissues of its base. Both ureters were then catheterised and from the left bloody urine escaped, but this could only be recognised when the urine was collected with the catheter; when it escaped into the bladder direct from the two ureters no difference in the colour of the fluid from the two tubes could be made out. The patient made a good recovery from the operation, and the left kidney being now regarded as the source of the trouble Dr. Keen proposed to explore that.

Enlarged Prostate.—(The *American Journal of the Med. Sci.*, Nov., 1890), contains a thoughtful and evenminded article by W. T. Belfield, M.D. of Chicago, on operations on the enlarged prostate. Acknowledging the advantages of drainage alone in a certain proportion of cases, he discusses the objections raised by Thompson, Guyon, and Socin to the more radical procedures, and concludes that they are in the main wrong. Belfield says that the majority of prostatics fail to evacuate the bladder, not because of the degeneration of the vesical muscles, but solely because of the mechanical obstruction offered by the prostatic growths. He maintains too, that this hypertrophy of the prostate is not limited to advanced life, and quotes a number of cases of true hypertrophy in patients of five years and upwards, and further says that the prostatic obstruction is usually of such form as to permit excision. In the present day, access may be obtained to the prostate by (1) perineal incision, (2) suprapubic cystotomy, (3) by a combination of the first two. Owing to the difficulty of completely examining the organ, through the perineal opening alone, this should be reserved for feeble patients, because of the less risk they are thus exposed to. The routine operation should be suprapubic cystotomy, which in a majority ot cases gives good results, in a few however, failure has followed. This want of success appears due to mischief in the prostatic urethra, which remains after excision of prominent out-growths into the vesical cavity. To avoid failure, the prostatic urethra should be stretched and explored by the finger and the discovery of a hard mass or unduly rigid ring should be the signal for perineal urethrotomy, incision or excision of the resisting tissue and thorough stretching.

Analysing 41 cases, previously dependent on the use of the catheter, in 32 voluntary urination was restored and maintained during the period of observation, varying from a few months to two years; in only a few is it however, definitely stated, that the evacuation was complete as well as voluntary.

Papilloma of the Right Kidney, giving rise to free and persistent Hæmaturia; Removal of the growth; Recovery.—The patient, a male, aged 55, was admitted into the Manchester Royal Infirmary Dec. 4, 1890. Eighteen months previously, whilst walking, he experienced a sudden faintness accompanied by great thirst and urgent desire to micturate; the urine passed contained a great deal of blood. The remaining symptoms comprised throbbing pain in the right loin, progressive emaciation, causing a loss of 34½ lbs. in weight, and anæmia. When admitted the urine was strongly alkaline and contained a large quantity of bright arterial blood, but no clots or particles of growth. Exploration of the bladder gave negative results, but the cystoscope does not appear to have been used. Abdominal palpation gave a sense of increased resistance over the right kidney, but no enlargement of the organ could be made out. The kidney was explored by the lumbar incision, and nothing abnormal being found by the finger or needle the pelvis was opened and a soft villous growth found within it of the size of the end of a thumb and having an appearance similar to such growths in the bladder. It was removed with the finger and a Volkmann's spoon, a few bleeding points being touched with the thermo-cautery. A further examination revealed what was regarded as another growth higher up in the pelvis, but the patient's condition forbade anything more being done. After the operation he passed a considerable quantity of urine by the wound, at first mixed with blood, but in three days it had quite cleared, so had that passed the natural way. Eleven weeks after the operation it was reported that the lumbar wound had almost healed, all the urine coming the natural way, and that there had been no hæmaturia or other symptom. Some time later there was complaint of pain in the region of the left kidney but there had been no return of bleeding and the general condition was satisfactory. A note is appended of similar cases recorded in current literature or in museums.—(Jones. *Medical Chronicle*, July, 1891).

Tuberculous Nephritis.—The Archiv für Klinische Chirurgie, Vol. 41, No. 2, contains an article by Madelung on Tuberculous Nephritis and its operative treatment. The first difficulty is that of accurate diagnosis. The detection of tubercle bacilli in the urine is held to be extremely difficult and generally impossible, and though the test of inoculating animals with some of the pus may establish a positive diagnosis, yet it takes weeks to determine this. But even when bacilli are found, or positive results are obtained by inoculation, there is considerable difficulty in deciding whether the bladder is also involved, for the cystoscope does not always give very positive information in these cases. When the disease is diagnosed as a nephritis, difficulty arises in determining which side is at fault in a number of cases, and

Thornton's method of examining by an anterior abdominal incision is rightly held to be unreliable. In two of Madelung's cases, after suprapubic section, the ureters were catheterised, but only a very fine instrument could be introduced, and the information derived therefrom was of little avail. The best way to make a complete diagnosis is to expose the kidney and examine it, nephrectomy being performed only in those cases where sufficient mischief is found to explain the symptoms present.

Cases of Uretero-Lithotomy.– In the *Boston Med. and Surg. Journal* for Sept. 11 and Dec. 25, 1890, two successful cases are recorded by Dr. A. T. Cabot. The first patient, a male aged 40, had suffered several sharp attacks of pain referred to the left side of the abdomen, just above the middle of Poupart's ligament. On April 16, 1890, an unusually sharp paroxysm of pain came on, and later a very sensitive spot was found in the back, midway between the crest of the ilium and the last rib; this did not disappear, and pressure on it gave rise to acute pain. The urine contained hyaline and granular casts and some pus on April 20th, and the next day the temperature rose to 101° F. April 22nd the pain was so intense that ether had to be administered for its relief; vomiting set in, and the pulse was weak and frequent; the urine was now free from pus. The description of the operation says that "an incision was made along the outer edge of the quadratus lumbarum muscle, from the lower edge of the twelfth rib to the crest of the ilium." The kidney was found to be high but its pelvis was explored with a needle without result. An exploration was then made along the course of the ureter and about two inches below the kidney a small stone was found in the ureter. With a blunt hook the tube was brought into view, and a stone, two grains in weight, was liberated by a longitudinal slit in the ureter, the incision being left unsutured. A good recovery followed, interrupted only by two sharp attacks of pain due to interference with escape of urine from the wound. By the end of three weeks no more urine escaped by the incision and the patient was up.

The second case was in a stout woman of 39, who for fifteen years had been subject to renal colic on the left side, several stones being passed. Dr. Cabot saw her in an attack which had continued with varying intensity for five or six weeks. At this time the urine was scanty, the skin moist, a tumour was felt in the left loin as large as two fists, and per vaginam, in the left broad ligament, a hard mass as large as the last joint of the forefinger could be felt close to the cervix uteri, but this could not be touched with a sound in the bladder. Owing to circumstances no operation could be done until some weeks later when an incision was made through the roof of the vagina on to the calculus. This was then seized with forceps but it broke, and all manipulations to dislodge the portion remaining were in vain until a blunt hook was passed up over the upper end of the stone. The complete removal was followed by a gush of pus, altogether about twelve ounces, and with this escape the lumbar tumour disappeared A T-shaped rubber tube was introduced into the ureter through the opening made. Five months later there was still a fistula in the vagina discharging pus, but at no time was any urine recognised as coming this way, from which it was concluded that the renal tissue was completely spoilt. The stone weighed 190 grains, and appeared to be made up of two stones which had become attached end to end.

In the *New York Med. Rec.* for Oct. 18, 1890, another case appears, published by Dr. Rufus Hall. The patient, a slender female, aged 36, had suffered the symptoms of renal colic on the left side for four years, with increasing severity and frequency. When first seen by Dr. Hall, a thorough examination failed to find anything to account for the symptoms, but accepting the history as reliable, he determined to examine the kidney by an abdominal incision. Just before the operation the patient announced that she had one of her attacks of pain coming on, and on palpating the abdomen under anæsthesia, a tumour, the size of a pint cup, was found in the region of the left kidney, which had not existed at the examination the day before. When the abdomen was opened in the middle line a cyst was recognised at the lower end of which a groove existed, overlapped by the cyst, and at this point, about three inches below the kidney a stone was felt in the ureter. The left hand fixing the kidney inside the abdomen an incision was made on to the organ from the loin, and the cyst emptied of about a pint of urine. By pushing up the ureter the stone could be felt from the back, but it could not be got out until the kidney was freely laid open along its convex border, and then by manipulation with one hand in the abdomen, and the other in the loin, the stone was extracted. A drainage tube in the lumbar wound was placed in the incision in the kidney, and there being some doubt whether the peritoneal cavity had not been opened from behind, a glass drainage tube was placed in the abdominal cavity. The patient suffered greatly from shock, but made a good recovery. The stone was about 3½ grains, and from its shape and position, was capable of acting as an occasional obstructing cause, producing temporary hydro-nephrosis. Reference is made to a few other cases of removal of stone from the ureter.

REVIEWS.

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ON THE TREATMENT OF DISEASES OF THE NERVOUS SYSTEM.*

In this book, which is a companion volume to the author's book on Diagnosis of Diseases of the Nervous System, we have what is very difficult to obtain from the ordinary text books, namely, a very concise and excellent account of the accepted means of treatment of nervous disease.

The subject is a difficult one to deal with, because of the relatively slow progress that our knowledge of the ultimate etiology and therapeutics of nervous disease has made, as compared with our powers of diagnosis, and it is scarcely possible to bring this branch of therapeutics within the scope of a scientific classification. We therefore think the author has acted wisely in not attempting such an arrangment, but has, in adopting a simple alphabetical arrangement, given us that form of book which will in the present state of our knowledge be found to be of the greatest practical utility.

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* On the Treatment of Diseases of the Nervous System. By C. W. Suckling, M.D. (Lond.), M.R.C.P. London: H. K. Lewis. 1890.

In consequence of the imperfection of our knowledge, and of our frequent ignorance of any sure mode of combatting the disease itself, our treatment is in many instances limited to the unscientific and unsatisfactory expedient of attacking the *symptoms* only, without being able to reach the main cause. Hence, a book of treatment to be really useful must deal with the prominent symptoms as well as with the diseases causing them, as is the case with the book before us, and it thus partakes on the whole more of the nature of a dictionary of treatment of morbid *states* of the nervous system, than of the definite varieties of "symptom complex" which constitute disease. This character is further borne out by the inclusion of *methods* of treatment, apart from the diseases for which they are employed, and we find such headings as Cold, Counter-irritation, Education, Electricity, Hypnotism, Massage, Rest, Sea Side, &c., and under each heading about a page, more or less, is devoted to the discussion of the particular means of treatment, its modes of application, and the morbid states which it is most likely to benefit.

To enhance the comprehensiveness and general value of the work, information of even a more general character still is added in the shape of brief notices of certain agents, which are more or less potent in causing nervous disorders, such, for example, as the paragraphs bearing on Measles, Rheumatism, Scarlet Fever, Tea, &c.

From the variety of subjects dealt with in the course of the 278 pages which make up this volume, it will be seen that it is not an exhaustive treatise, for there is a good deal more that could be said on the treatment, for example, of Hysteria, or Neurasthenia, than can be got into the compass of the two or three pages here devoted to these subjects. These two or three pages, however, together with what is said about the treatment of individual symptoms in other parts of the book, suffice to give the main lines upon which treatment must be conducted, together with the principal drugs that are likely to prove of value, and a book is thus produced that will prove of much greater service to the medical practitioner, than a volume of twice the size would do.

Certain of the more important diseases receive more full consideration, and among these may be mentioned a most comprehensive, yet terse account of the treatment of Epilepsy, in fact, there is a surprising amount of information compressed into the five and half pages devoted to this subject. The same may be said of other articles, such as that on Locomotor Ataxia, although here a somewhat disproportionate amount of space is devoted to the "Suspension" treatment.

In the ten pages devoted to syphilis of the nervous system, some space is allotted to the enumeration of sundry points in connection with the diagnosis of this condition, whose recognition by the physician is of vital importance to the patient.

We have in this book a great deal of useful information in small compass, and so arranged as to be very easily accessible, and it moreover evidently embodies the practical knowledge gained by a physician who has had a very extended experience of all classes of nervous disease. This evidence of personality very greatly enhances its value, and, although it may be at times carried rather to excess, it renders the book reliable as a trusty guide for the practitioner in a way that no mere unauthoritative summary of other persons' experience would be.

The book is well got up, and its handiness, added to its excellence as a book of reference, ought to insure for it a wide field of usefulness.

FLUSHING AND MORBID BLUSHING; THEIR PATHOLOGY AND TREATMENT.*

THIS work adds another to the many treatises on special subjects which are now necessitated by the increase of our knowledge but whose appearance, albeit of great service, renders it increasingly difficult for the practitioner to keep pace with the progress of medical science. We have here nearly 250 pages devoted to the discussion of the causation and treatment of various forms of Flushing and Blushing. Although this is a comparatively simple matter so far as the health of the patient is concerned it is an extremely trying condition and causes much annoyance and mental distress, and, on account of its frequency, a better understanding of how to remedy the condition will add much to the comfort of very many of our patients.

The author commences by a short preliminary revision of the physiology of the skin with regard to its blood supply and relation to the central nervous system. He then proceeds to differentiate the simple emotional blush from the nerve-storm which occasions what is known as Flushing, and is characterised by various combinations, both as to sequence and presence or absence of the three phenomena of dilatation of capillaries, sweating and contraction of the blood vessels (with sensation of cold). He first takes up Flushing, and to it devotes more than 100 pages, dealing separately with each of the three phenomena and illustrating his remarks by appropriate cases, statistics, and illustrations, shewing the distribution of the phenomena in individual cases.

After carefully considering this subject he shews the probability that the nerve-storm which causes the flush originates in the cerebral cortex, and that the resulting efferent impulses determine a local dilatation of the vessels in the corresponding skin area (thus necessarily increasing the original sensation of heat).

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* Flushing and Morbid Blushing; their Pathology and Treatment. By Harry Campbell, M.D., B.S. Lond. London: H. K. Lewis. 1890.

In discussing the causes of Flushing he shews clearly what a large part is played by disturbances of the sexual functions, and especially in the female at the climacteric period; a fact that every physician will be ready to admit.

In analysing the causes of Emotional Morbid Blushing he shews what a large part is played by various forms of self consciousness, and he gives a fairly good classification of these.

The last 60 pages constitute an important part of the work, dealing as they do with Treatment. This must of course be directed to the *cause* of the nerve-storm rather than to the nervous discharge itself, and therefore we find more than 30 pages devoted to "The Philosophy of the Treatment of Nervousness."

The remainder of the volume consists of the methods of making practical use of the foregoing theoretical considerations and the drugs, etc., that are most likely to prove of value.

The book is enriched by a good index and bibliography. It is very well thought out and contains much that will stimulate thought on the part of the reader and assist him in the endeavour to look at things from a scientific standpoint in addition to giving him useful hints in the practical treatment of rather an obstinate morbid condition.

MASSO-THERAPEUTICS.*

The demand for this book, which deals with a recently revised mode of treatment, and one which is very fashionable at the present time, continues to be great, and we have now before us the Fifth Edition; and of these the last three have appeared in little more than as many years.

The work continues to increase in size as our knowledge of massage as a means of treatment grows with experience, and its value is increased by the addition of more illustrations of the method of performing massage.

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* Masso-Therapeutics: or Massage as a Mode of Treatment. By Wm. Murrell, M.D., F.R.C.P. Fifth Edition, 1890. London: H. K. Lewis.

Dr. Murrell rightly protests against the indiscriminate practice of massage by imperfectly educated operators, and by means of this book tries to insure its proper use by diffusing scientific knowledge of the subject. We are not sure, however, that he does not go rather too far in the opposite direction, and make it appear too much of an occult science, attainable only by the few; and the way in which he finds in it a cure for a large majority of the ailments to which flesh is heir arouses the suspicion that its action is very largely dependent upon its psychical effect, and that there is not so much need for a knowledge on the part of the operator of accurate origins and insertion of muscles and of motor points as Dr. Murrell would have us believe.

The present volume consists of 258 pages, but a certain proportion of this space is taken up by cases and by narrations that do not seem to have much, if any, bearing upon the matter in hand; and although it may make the book a good deal more interesting than it would otherwise be, this diffuseness and occasional want of exactness certainly detracts from its merit as a scientific work. The book is nevertheless a very useful one, and the profession and the public have reason to be grateful to the author for the way in which he has taken up this subject.

THE NURSING RECORD.*

THIS manual has already appeared under the title "Hints to Nurses," and was the joint production of the present authoress, Mrs. Rachel Norris, and the late Miss Alice Fisher. On the whole it is the best we have seen of this series, containing all the details of nursing which can be communicated on paper, whilst at the same time it eschews those matters which are properly the care of a physician or surgeon, and which it is not necessary or advisable to instil into nurses. There is a smattering of anatomy and physiology sufficient to recall to the nurse's mind what she has been taught on these subjects in the lectures she should attend, but the bulk of the letter-press is devoted to sound practical teaching on the art of nursing. We notice, however, in places a rather loose and inaccurate way of stating things; take for instance, page 146, where in speaking of splint padding, we find the following:—"In some hospitals this is a most elaborate proceeding, and one in which the nurses take great pride. In others, the padding is done in the roughest way, but I dare say effects the intention quite as well as the other." Those who have had the misfortune to wear splints would soon correct any notion of this kind. At the end, there is a useful glossary of medical and surgical terms.

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* The Nursing Record Series. No. 2. Norris's Nursing Notes. London: Sampson Low, Marston & Co.

No. 3.—A Manual of Practical Electro-Therapeutics. By Arthur Harries, M.D. and H. Newman Laurence; one of the same series as the last.

It is difficult to understand why this book is included in a set which is intended for the education of nurses. We notice in the preface, that it is prepared to meet the requirements of nurses and students, and in the hands of the latter, it is undoubtedly capable of imparting valuable information. To place such a book in the hands of nurses seems to us, however, absurd; first of all, it would be entirely over their heads, and secondly, the bulk of the information contained would be absolutely useless to them even if they could understand it.

No. 4.—Massage for beginners by Lucy Fitch, is a terse description of the various manipulations used by the Masseuse with some excellent hints and general directions founded on good common sense. This appears to be an excellent little manual.

URINARY DISORDERS CONNECTED WITH THE BLADDER, PROSTATE, AND URETHRA.*

In these six lectures are embodied many of the original views of the author, which have been previously published, and some practical hints which make the perusal of the little book well worth the while of anyone interested in urinary surgery. "Moulding the Prostate" by passing bougies whilst the organ is enlarging and before it has given rise to much trouble, is expatiated upon at length, but the arguments hardly seem to us to carry conviction as to the feasibility of the process. On page 21, attention is drawn to a rare condition "prostatic fissure," an analogy being drawn between this and fissure of the female urethra or of the anus. Mr. Harrison's views of the value of persistent perineal drainage for prostatics are enforced in the second lecture, and he strongly insists upon the shrinkage the prostrate undergoes when this treatment has been adopted.

The value of drugs in sterilizing the urine before and after operations such as urethrotomy is thoroughly appreciated, and the use of boracic acid and of hyposulphite of soda is specially recommended.

In chapter IV. on Hæmaturia, the conclusion is arrived at that in 30 per cent. of the cases, the hæmorrhage is due to renal calculus; this seems to us an unusually high proportion even in a district like our own where stone is very prevalent.

POCKET MEDICAL VOCABULARY.†

This small dictionary has been thoroughly revised in the present edition, many obsolete words being omitted and modern terms inserted. It is on the whole reliable for reference purposes.

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* Lectures at St. Peter's Hospital on some Urinary Disorders connected with the Bladder, Prostate, and Urethra. By Reginald Harrison, F.R.C.S. London: Baillière, Tindall, and Cox.

† Pocket Medical Vocabulary. 2nd Edition. London: H. K. Lewis. 1891.

COLLECTED CONTRIBUTIONS ON DIGESTION AND DIET.*

This little book consists mainly of a reprint of the author's Lumleian Lectures "On the Digestive Ferments and Artificially Digested Food," delivered before the Royal College of Physicians in 1880, and a course of five lectures "On Dietetics and Dyspepsia," given at Owen's College, Manchester, in 1885, together with a few other detached papers including the address "On some practical points in Dietetics," delivered before the Manchester Medical Society last year. But though not new, they are so excellent that we warmly welcome their reappearance in this collected form. The lectures on dietetics are full of useful practical suggestions, and we know of no work dealing with this subject which we can so warmly recommend for the guidance of practitioners.

ATLAS OF CLINICAL MEDICINE.†

This is the first fasciculus of this new and remarkably enterprising medical publication. It contains seven beautifully executed plates, of which three are in colours, illustrating myxœdema, sporadic cretinism, lymphadenoma, and melancholia. In addition, there are numerous woodcuts illustrating the text of the description of Friedreich's ataxia. There is some want of correspondence between the plates and letterpress, as the only subjects described in the text are myxœdema, sporadic cretinism, and Friedreich's ataxia. It is almost needless to say that the descriptions are most carefully compiled, and that there are abundant references to the literature of each subject. Nothing could excel the quality of type and paper. In all respects this fasciculus is equal and in many respects superior to anything of the kind hitherto published, and if the same high level can be maintained throughout, this Atlas will acquire wide and enduring fame.

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* Collected Contributions on Digestion and Diet. By Sir William Roberts, M.D., F.R.S. London: Smith, Elder and Co. 1891.

† Atlas of Clinical Medicine. By Byrom Bramwell, M.D., F.R.C.P. Edin., F.R.S. Edin., Assistant Physician to the Edinburgh Royal Infirmary. Vol. I., Part I. Edinburgh: T. & A. Constable. 1891.

NOTES ON SURGERY FOR NURSES.*

The fact that this book has reached a third edition is an indication of its popularity. None the less we cannot help expressing the doubt both of the wisdom and of the necessity of placing in the hands of a nurse books of this kind. The very moderate knowledge possessed by nurses of anatomy and physiology renders them unable to appreciate most of the technical details here described. The result can only be considerable confusion in the minds of those whom it is intended to educate. Further, it is likely to lead them to usurp functions not their own, and to illustrate the truth of the old adage, "that a little learning is a dangerous thing."

THE PHYSICAL SIGNS OF CARDIAC DISEASE.†

We have, on the publication of the First Edition, expressed a very favourable opinion upon this little book as a guide to students. The present volume appears to be a reprint with the addition of a few notes. It is the best and simplest guide to the auscultation of the heart.

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* Notes on Surgery for Nurses. Third Edition. By Joseph Bell, M.D., F.R.C.S. Edin. Edinburgh: Oliver and Boyd.

† The Physical Signs of Cardiac Disease. By Graham Steell, M.D., F.R.C.P. Second Edition. 1891.

BRITISH PHARMACOPŒIA.*

We have here a short description of the way in which the new materials are to be made, or of the source from which they are derived, together with their characters and tests. Following these is a short description of the therapeutic properties of each drug.

Local Notes.

Mr. George Heaton, M.B., F.R.C.S., has been appointed Assistant Surgeon to the General Hospital in the place of Mr. Barling who has been elected Surgeon.

The scheme for the New General Hospital is being steadily pushed forward. The architect will be selected by a limited competition, the competitors being chosen both from Birmingham and outside it. The Committee have secured the eminent Architect, Mr. Alfred Waterhouse, R.A., as their adviser and assessor.

Miscellany.

L.S.D.—A Subscriber to the *Journal* says that, considering the large incomes made by the dentists, the initials so often appearing after their names are given in the wrong order.

Helping the Doctor.—A country editor lay in an unconscious condition, and for some time it was feared he was dead. "Can't you rouse him, doctor?" was anxiously asked. "No," the man of medicine replied. "I fear that life is extinct." Then the editor's assistant bent over and whispered in his ear, "A gentleman wants to put an advertisement in the paper," Immediately the unconscious man's face showed signs of returning life, and, struggling to a sitting posture, he said feebly, "How many lines?"

An enterprising lady has been making investigations upon the question of matrimony in regard to her sex. She finds that the highest marriage rate is among trained nurses, and impartial observation would rather tend to support the statement that this is the best field for matrimony which the fair sex enjoys.

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* Notes on the additions made to the British Pharmacopœia, 1890 By Frederick T. Roberts, M.D., F.R.C.P. London: H. K. Lewis.

SNEEZING ONE'S TEETH OUT.—The report of the physician in charge of the Ningpo Missionary Hospital for the past year contains some interesting observations on tooth-drawing in China. Dr. Daly remarks that Chinese teeth are much more easily extracted than those of Europeans. The native dentists are said to possess a wonderful powder, which is rubbed on the gum over the affected tooth; after an interval of about five minutes the patient is told to sneeze, whereupon the tooth falls out. Dr. Daly has offered a reward of $100 to anyone performing the operation in this way in his presence, on condition that he is allowed to choose the tooth and examine the mouth before and afterward. So far no one will consent to perform the operation on these conditions.—*British and Colonial Druggist.*

AN OLD STORY RETOLD.—Dr. F—— sometimes drank a good deal at dinner. He was summoned one evening to see a lady patient when he was more than half seas over, and conscious that he was so. Feeling her pulse, and finding himself unable to count its beats, he muttered, "Drunk, by Jove!" Next morning, recollecting the circumstance, he was greatly vexed, and just as he was thinking what explanation of his behaviour he should offer to the lady, a letter from her was put into his hand. "She too well knew," said the lady, "that he had discovered the unfortunate condition in which she was when he last visited her, and she entreated him to keep the matter secret, in consideration of the enclosed (a £100 bank note)."

New Books, etc., Received.

Stertor, Apoplexy. etc. By ROBERT L. BOWLES, M.D., F.R.C.P. London: Baillière, Tindall, and Cox. 1891.

Atlas of Clinical Medicine. By BYRON BRAMWELL, M.D., F.R.C.P. Edin. Vol. i., Part i. Edinburgh: T. and A. Constable. 1891.

Subjective Noises in the Head and Ears; their Etiology, Diagnosis. and Treatment. By H. MACNAUGHTON JONES, M.D., F.R.C.S.I. London: Baillière, Tindall, and Cox.

Modern Materia Medica. By H. HELBING, F.C.S. Second Edition. 1891. The British and Colonial Druggist. London.

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THE
BIRMINGHAM MEDICAL REVIEW.
SEPTEMBER, 1891.

ORIGINAL COMMUNICATIONS.

THE MEDICAL TREATMENT OF SO-CALLED PERITYPHLITIS, OR INFLAMMATION OF THE APPENDIX VERMIFORMIS.

BY ROBERT SAUNDBY, M.D., F.R.C.P.,
PHYSICIAN TO THE GENERAL HOSPITAL, BIRMINGHAM.

DURING last winter a discussion took place at the Medical Society of London on the treatment of inflammation of the appendix vermiformis, at which very strong statements were made by some of the surgical speakers, and these were apparently acquiesced in by some of the physicians who took part in the debate, the president going so far as to lay down the rule that once inflammation of the appendix had been diagnosed the case should be handed over for surgical treatment. Though these views did not go unchallenged, and were warmly opposed by so brilliant a surgeon as Mr. Treves, such or similar expressions of opinion have not been altogether unheard in Birmingham, so that it seems to be that there is some need for an appeal to clinical facts to shew what medical treatment can do for these cases.

In the past six years, during which I have been physician to the General Hospital, I have had under my care fifteen cases of perityphlitis, of which the following are brief notes.

Case 1.—*Relapsing appendicitis; tubercular history; nine months' duration; three relapses; operation; death; autopsy.*

E. B., 35, labourer, was admitted into the General Hospital April 10th, 1885, complaining of pain and swelling in the right iliac region. His previous health had been good, except for an attack of "inflammation of the stomach," caused by a kick from a horse just below the umbilicus, seven years ago.

His father died of a tumour of the stomach; his mother was alive and healthy. Five brothers and sisters were living in good health. A brother and sister had died of phthisis, and his paternal grandmother died from a tumour. His present illness began nine months before admission, when he felt a pain reaching from the umbilicus to the anterior superior spine of the ilium. Six months ago he noticed a lump, not so large as a marble, which, during the last few weeks had grown rapidly. He had lost a good deal of flesh lately. He had given up heavy work for two months, but had continued to do light work until a week before admission.

He was a florid, well developed, and fairly nourished man. T. 99°, P. 72, R. 22. In the right iliac fossa there was a tender oval swelling the size of a duck's egg, the upper extremity of which was on a level with the anterior superior spine, and its long axis was parallel to Poupart's ligament. It was very slightly movable, but could be slightly depressed. The glands in the neighbourhood were slightly enlarged. Physical examination revealed no other abnormality. His pulse was jerky and rather small.

He was treated by five grain doses of calomel repeated till purging ensued, under this treatment the swelling gradually disappeared, and on May 6th he was to have got up, but the pain and swelling returned, T. 101°. Under the same treatment the swelling diminished, and on June 10th he was sufficiently well to be made an out-patient.

On June 12th, the pain and swelling returned and he was re-admitted on June 18th, T. 99°., P. 86, R. 20. He complained of pain in the swelling on commencing to pass water. There was some retching and the abdomen was tender. Again, under similar treatment, with the local application of an ice bag the swelling diminished; but, on July 18th, it returned and continued to increase in size. On July 21st, he was operated on by an incision parallel to the axis of the tumour. The thickened sub-peritoneal connective tissue was divided, and the abdominal cavity was opened, but nothing further was done. A drainage tube was placed in the wound, and the incision closed by sutures. On the third day after the operation, the evening temperature rose to 103; and vomiting occurred. His pulse was 130. He suffered a good deal of pain, which was greatly relieved by a free action of the bowels. On the 26th, the abdomen was universally tender, and vomiting returned, T. 102·5°, P. 160, his extremities became cold, he grew delirious towards evening and died at 11.20 p.m.

It is only fair to say that this operation was not done in precisely the way it would be performed now. The object of it was to see if suppuration could be detected anywhere, and the surgeon having failed to detect this, proceeded no further. That there was no suppuration was shewn by the dissection.

Autopsy.—The body was that of a well-made man with a fair quantity of subcutaneous fat. Rigor mortis and hypostatic congestion were slight There was a linear incision with black gaping edges extending from half an inch internal to the anterior superior spine on the right side for two and a half inches inwards. It laid open the peritoneal cavity. The lungs were crepitant throughout, but œdematous and congested in their lower lobes. The heart was healthy.

On opening the abdomen, the great omentum was found to be drawn down, and its right lower angle was thickened and adherent to the upper edge of the wound. On raising this, general purulent peritonitis was found to exist. Beneath a matted coil of the lower part of the ileum was the track of the drainage tube surrounded by lymph. Running along the brim of the true pelvis was the spermatic duct thickened by exudation and closely incorporated with a swelling as large as a walnut, which dissection shewed to be the vermiform appendix. This was behind and internal to the cæcum; one and a half inches in length and buried in inflammatory lymph. Its walls were thickened, its cavity dilated and containing three small brittle concretions. The opening into the cæcum was patent. The cæcum contained a little light yellow fæces, and was free from inflammation. Liver enlarged, fatty. Spleen and kidneys normal.

Case 2.—*Appendicitis; (?) tubercular history; recovery.*

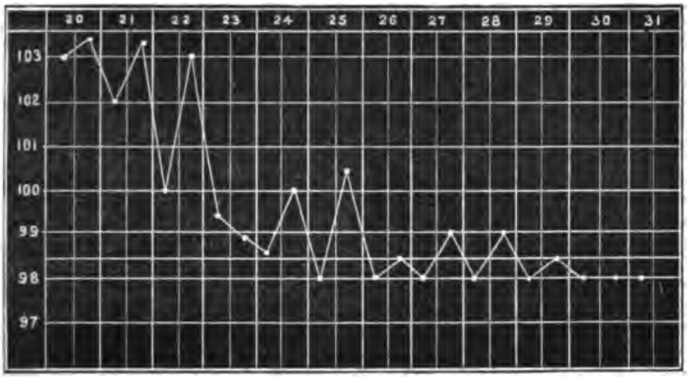
A. H., 9, schoolgirl, admitted July 28th, 1885, complaining of a swelling in the right iliac region. Her previous health had been good, except that she had had two "abscesses" in the right side of the abdomen and one in the elbow two years before. Her father died of "bronchitis," her mother was alive and well. She had no brothers or sisters. She appeared a healthy well-nourished child. T. 100, P. 80, R. 20.

There was a large hard swelling in the right iliac region, which was not tender or interfering with locomotion. She was confined to bed and treated by enemata repeated every other day. The tumour gradually disappeared, and on August 17th she was discharged cured.

Case 3.—*Appendicitis; tubercular history; duration twenty-five days; spontaneous purging*; *recovery.*

W. H., 26, labourer, admitted Oct. 20th, 1887, complaining of pain in the bowels and back. His father and mother were both alive and well, but he had lost one brother from consumption, another died aged two weeks, but the rest were strong and well. His previous health had been good, except that when he was very young he had "fits," and as his work exposed him to damp he had had rheumatic pains in his knees and hips.

A few days before admission, while stooping, he felt a sharp pain in the right iliac fossa, but he went on with his work. The next day was Sunday. On the Monday he was too ill to go to his work, his bowels were confined, on the Tuesday he was taken with sickness and shivering. He was a healthy looking, well developed man. T. 103·3, P. 108, R. 28. There was pain in the right iliac fossa, and a lump could be felt above Poupart's ligament. His bowels were freely moved without medicine. Physical signs otherwise normal. He was treated by rest and hot fomentations. On the 23rd his temperature became normal, and though it reached 100·5° on the 25th, it afterwards remained low. During the first week he was delirious at night, and required a special attendant. The bowels continued to be freely open, and the patient to improve till Nov. 9th, when he was discharged cured.

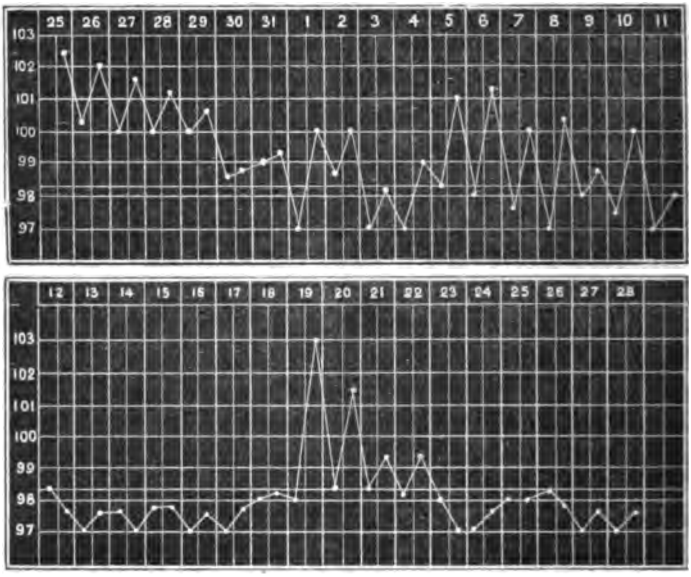


Case 4.—*Appendicitis; rheumatic history; duration fifty-four days; recovery.*

A.P., 26, porter, admitted August 25th, 1887, complaining of pain in the right iliac fossa. His previous health had been good, but he had had scarlatina when a child and acute rheumatism two years ago. His father and mother were alive and well; two brothers died in infancy; the others were living and in good health.

On the afternoon of the 21st he was seized with severe pain in the abdomen, but for a fortnight he had felt slight pain at intervals. There was no vomiting, but the pain grew worse, so he consulted a doctor, who ordered an enema which gave great relief. That evening he vomited, and continued ill till admission. He was a poorly nourished man, face flushed. T. 102·5°,

P. 100., R. 30. Tongue furred, bowels confined. He complained of constant pain in the right iliac fossa, and of shooting pains at intervals all over his abdomen. He was ordered a poultice



to relieve the pain and five grains of calomel followed by a simple enema. He went on not very satisfactorily for some days, his bowels being made to act with salines, or calomel, or enemata, until the end of September, when he began to get well, and was discharge cured on October 18th.

Case 5.—*Appendicitis; duration twenty-seven days; recovery.*

W. W., aged 18, admitted March 7th, 1888, complaining of pain in the right lumbar and iliac regions, made worse by coughing.

His father was dead, but the cause was unknown; the rest of his family were alive and well.

His previous health was good, until twelve days ago he was suddenly taken with pain in the right side of the abdomen. His bowels had been confined for three days, but were relieved by a dose of salts. There had been some vomiting before admission, and he thought he had got thinner.

He was a well developed, fairly healthy looking lad. He lay on his back, with his right leg drawn up. T. 100·5°, P. 72, R. 24. Tongue furred; bowels freely open. There was marked tenderness and dulness on percussion in the right hypochondriac and iliac regions, while on palpation a hard resistant swelling could be felt. His physical signs were otherwise normal.

Hot fomentations were ordered to the seat of pain. On the 9th his bowels had to be opened with an enema, which was followed by free purging. On the 13th he had several doses of calomel, and on the 15th another enema. The tumour meanwhile had become softer, and the pain much diminished. By the 20th the swelling and pain had entirely disappeared. He was ordered to take a saline aperient every morning, and on the 22nd he was discharged cured.

Case 6.—***Appendicitis; rheumatic history; aortic disease; duration one hundred and seventy-two days; recovery.***

C. H., 43, iron moulder, admitted Nov. 16th, 1886, complaining of pain in the right groin, of ten weeks' duration. At the beginning of his illness he suffered from constipation for four or five days, and had severe pain across the lower part of his abdomen He was under medical treatment, and he noticed that ***when he had a motion the pain became less***, and was more limited to the right side. There was a swelling in the latter situation which got larger when he walked about much. His bowels were more or less constipated for four or five weeks, but latterly they had been regular.

His previous health had been good, but he had had acute rheumatism three years ago.

His father died of "stoppage of the bowels"; his mother was dead, but the cause was not known. He had only one brother, who was alive and well. Patient was a married man with seven healthy children.

He was a well developed man. T. 98, P. 66, R. 18. There was an oval tumour in the right inguinal region, reaching one inch to the right of the middle line and to the anterior superior spine of the ilium. It was firm to the feel and tender on pressure. There was a double aortic murmur over the heart, with Corrigan's pulse. The physical signs were otherwise normal.

He was treated by hot fomentations and calomel without much effect for a month. On Dec. 19th, a blister was applied over the tumour, and kept raw with savin ointment. The tumour then commenced to disappear; by Jan. 18th there was only a little hardness on deep palpation, and he could get up.

On February 1st a defined painful tumour developed on the left side over the sigmoid flexure, so that he had to remain in bed. At this time his bowels were acting regularly, generally twice a day. The swelling improved with rest, and he was sent to the Jaffray Hospital on March 4th. While there he was treated locally by iodine and blisters, with laxatives. He had no relapse, and was eventually discharged on May 7th; but there is no record of his condition on leaving the hospital. The swelling in the left side of the abdomen apparently disappeared without giving further trouble.

Case 7.—*Appendicitis; duration fifty-three days; recovery.*

W. G., 16, bricklayer, admitted April 3rd, 1888, complaining of pain and swelling in the right iliac fossa. His father and mother were alive and well. Four brothers and sisters were living and in good health; five others died young. Patient had never been laid up with any previous illness. Ten days before admission he was seized while in bed with vomiting and pain in the right iliac region, since which time he had been in bed. His bowels were open regularly. He was a sparsely nourished lad. T. 102, P. 102, R. 28.

In the right iliac region there was a swelling reaching from the anterior superior spine to the middle line. Tongue furred. Physical examination revealed nothing elsewhere. His bowels were opened freely by an enema, and fomentations applied. The swelling rapidly diminished till, by the 11th, it could no longer be defined. The seat of the swelling was painted with iodine. On the 11th of May he got up and continued to improve. On the 26th he was sent to the Sanatorium cured.

Case 8.—*Appendicitis; muscular strain; duration twenty-eight days; recovery.*

A. S., 24, domestic servant, admitted Nov. 4th, 1889, complaining of pain in the right iliac region. She had felt this since Oct. 25th. Father died of scarlatina, aged 30. Mother and one brother alive and well. None dead. She could remember no illness but measles and whooping cough when a child.

The present illness began with sharp pain in the right iliac region, which came on while she was running. The next day she noticed a lump which she pointed out as occupying the right iliac fossa opposite the anterior superior spine. She was menstruating at the time, and continued to do so up to admission. Her bowels were confined for two days after the lump came, but were opened before it disappeared She did not take to her bed, but kept at work till Nov. 2nd. For the last ten days her bowels had been only open on alternate days. She was well developed and well nourished. T. 98·2°, P. 96, R. 20. Tongue moist; bowels confined. No lump could be felt. Physical signs normal. Dr. Malins was asked to examine the patient, and he noted that the uterus was retroverted and tilted to the left, but mobile, and that nothing could be felt in the region of the ovaries.

She continued to complain of pain, and on Nov. 6th an oval swelling was detected just above Poupart's ligament, to which its long axis was parallel; it was very tender. She was treated by the Ht. Magn. Sulph c Ferro, containing sufficient sulphate of magnesia to keep up a free action of the bowels, and hot fomentations were applied to the swelling. The menstrual flow continued for some days, and on the 11th her temperature rose to 100·4°. But by the 14th all her symptoms had disappeared, and on the 22nd she was discharged cured.

Case 9.—*Appendicitis; history of typhoid fever: duration, thirty-five days; recovery.*

A. C., 19, brushmaker, was admitted Aug. 14, 1889, complaining of pain in the right groin of four days' duration. Her previous health had been good, but she had suffered from measles and scarlatina. Father committed suicide; mother and one brother and one sister alive and well.

In the May before this attack she had complained of headache, loss of appetite and pain in the bowels. She was attended by a doctor who said she had typhoid fever, and she was ill for nine weeks. A week before admission, she did not feel well and her mother gave her some castor oil, which was followed by two movements of the bowels, but after this they were confined for three days, and she felt herself getting gradually worse. On the third day, she had pain in the right inguinal region and the bowels were purged four times. The pains got worse, although the bowels were open daily. However, she continued at work till the day of admission.

She was a rather spare girl, T. 101°, P. 108, R. 20. Tongue furred, bowels open. There was increased resistance, tenderness and swelling in the right iliac region, the swelling having a well-defined edge.

There was deficiency of breath sounds, and loss of resonance over the right side of the chest, but otherwise, the physical signs were normal. There was no cough or dyspnœa. She was treated by rest and glycerine enemata. On this treatment she slowly recovered and was discharged on Sept. 14th cured.

Case 10.—*Appendicitis; tubercular history; duration forty-one days; recovery.*

H. R., 40, miller, admitted October 15th, 1889, complaining of pain in the right side of the abdomen, loss of appetite and sleeplessness. He had been ailing fourteen days.

Father and mother died at good ages. Three brothers and two sisters were dead, from a "cold," from "bronchitis," by shipwreck, after a confinement, and one in infancy. A brother and sister were alive and well. He could remember no illness except fever when he was twenty.

His present illness began a fortnight before admission with a sore throat, general aching pains, and cramp across the "bottom of the belly." His bowels were not confined. He believed that he had lost two stones in weight in a fortnight. He looked thin and ill; skin moist. T. 99°, P. 80, R. 20.

Tongue dry and coated. There was a hard swelling in the right iliac region, the size of an orange. Physical signs otherwise normal. He was treated by rest in bed and hot fomentations to relieve the pain. Under this treatment the swelling diminished, and on November 11th he was discharged cured.

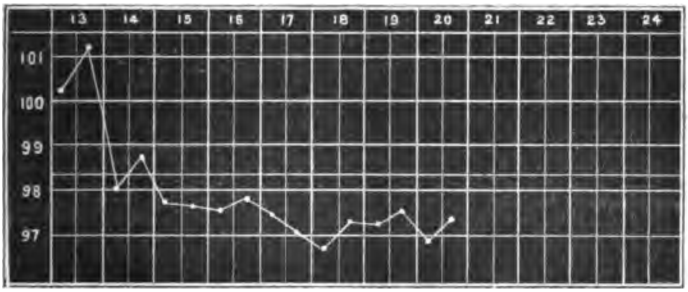
Case 11.—*Appendicitis; tubercular history; duration nine days; recovery.*

J. B., 15, admitted May 13th, 1890, complaining of pain in the right iliac region. He had been ill twenty hours.

His father was in good health; his mother suffered from rheumatism. Of four brothers, one was suffering from phthisis, the others were healthy. One had died, cause not known. Five sisters in good health.

Three months ago he had an attack of pain similar to this, which lasted twelve hours. No other illness.

The present attack came on quite suddenly while he was at work. He felt faint and sick and he vomited when he got home. He then came up to the hospital when he was given a draught which he vomited at once. The pain continued until shortly after admission. He had not been constipated, nor had he strained or hurt himself in any way. He was well developed and well nourished. T. 100·2°, P. 108, R. 24.



Tongue moist but coated. Thirst marked, appetite poor. There was an area of tenderness and resistance in the right iliac region, but no dulness or swelling. The heart's action and the pulse were irregular, but there was no murmur. Physical signs otherwise normal. He was treated by rest, hot fomentations Ht. Mag. Carb., and enemata. By the 16th the pain was much better, and on the 21st he was discharged cured.

Case 12.—*Appendicitis; rheumatic history; duration twenty-four days; recovery.*

H.C., 7, admitted January 8th, 1889, complaining of pain and swelling in the right iliac region. He had been ill nine days. His father and mother and five brothers and sisters were in good health. He had had scarlatina and measles and his mother "thought he had had rheumatics."

For the last three weeks he had been troubled with thread worms, and nine days before admission he began to complain of pain in the right iliac region which continued to get worse until admission. He was sick on the day the pain first came on, but not since, though he had felt sick, seemed very tired and sleepy, and would not take his food. His bowels were opened just before admission.

Patient was a healthy looking fairly nourished boy. T. 100, P. 90. In the right iliac region there was an oblong swelling, hard and gurgling on pressure. Percussion note over it was dull. Abdominal muscles tense. He lay with his knees drawn up. The heart's apex was in the nipple line and the sounds were loud and thumping, but there was no murmur. The breath sounds and resonance on percussion were diminished at both bases. Physical signs otherwise normal. He was treated by blistering over the tumour. By the 14th the lump had gone. On the 23rd he was discharged cured.

Case 13—*Relapsing Appendicitis; history of constipation; duration forty days; recovery.*

G. S., 29, striker, admitted August 29th, 1890, complaining of pain in the right iliac fossa which extended across to the umbilicus. He had been ill two days. Father suffered from bronchitis; mother had suffered several times from stoppage of the bowels. Eight brothers and sisters in good health. No history of phthisis, rheumatism or cancer. His previous health had been good, but his bowels were generally constipated; he had had no similar attack before. This illness began suddenly with pain in the right iliac fossa. He came to the hospital and was ordered to put on fomentations, which did not relieve him. He vomited. In the morning he returned and was given some castor oil, after which he was better, though the bowels did not act. On his return he was admitted.

Patient was a well-developed and well-nourished man. T. 99, P. 72, R. 30. Tongue slightly furred, appetite almost gone, increased pain after taking food; nausea all day before admission. A castor oil enema brought away a copious motion. There was great tenderness and resistance with dulness on percussion, but no definite tumour in the right iliac fossa. There was a soft systolic murmur at the apex of the heart, with dyspnœa and faintness on exertion. In the right supra clavicular fossa there was some impairment of resonance with prolonged expiration. The urine contained a haze of albumen. He was treated by rest in bed, hot fomentations, and Ht. Mag. Carb. As the tenderness diminished, a swelling could be made out over the cæcum. By the 31st all pain and swelling in the right iliac fossa had gone, but he complained of pain in the testicles. Next day he was free from pain, and on September 7th he was discharged. He was re-admitted on September 17th with a return of the old symptoms, and then a distinct rounded swelling could be felt in the hypogastric region. T. 101, P. 76, R. 24. He was treated with calomel and a hot Seidlitz powder, afterwards by enemata. By the 24th his symptoms had disappeared, and he was discharged on October 5th cured.

Case 14.—*Appendicitis; duration thirty-four days; recovery.*

A. T., 21, brass caster, admitted July 15th, 1890, complaining of pain and swelling in the right iliac fossa. He had been ill four days. His father had died, aged 40, of fits. His mother and seven brothers and sisters were in good health. One sister died a few hours after birth. Patient's previous health had been good; he had had scarlatina and measles in childhood.

His present illness began early in the morning while he was in bed with pain across the abdomen above the umbilicus. He vomited five or six times, and his bowels acted once. Next day he was better, but he felt a pain in the right iliac region, where he noticed a lump. His bowels acted twice. He was better after this, but on coming to hospital he was admitted. Patient was a well-developed and well-nourished man. T. 99°, P. 108, R. 28. Tongue moist; appetite bad; bowels open. There was a smooth firm tumour with a well-defined edge in the right iliac fossa, which was tender on palpation. Physical signs were otherwise normal.

He was treated by fomentations and enemata, afterwards by an ice bag applied locally. His pain disappeared; the bowels were well moved by an enema. The swelling diminished slowly. He had some trouble with his water and required the catheter for a day or two.

On Aug. 14th he was to have been sent to the Jaffray Hospital, but refused to go and went home against advice. His temperature was normal, but there was still some swelling.

Case 15.—*Appendicitis; tubercular history; duration sixty-five days; recovery.*

R. W., 17, pressworker, admitted Dec. 11th, 1890, complaining of severe pain in the abdomen, with general tenderness, most marked in the right iliac fossa She had been ill only since the previous evening. Her father was in good health; her mother had died of consumption; three brothers and sisters in good health; none dead. She had had good health, but about a year before she was in this hospital with rheumatism, and was ill a month.

Her present illness came on suddenly with pain in the bowels which got worse as night came on and was attended by shivering. The bowels were moved. Next morning she vomited, but she rose and went to work, where the pain grew so much worse that she was sent to the hospital. During the previous week her bowels had not been well opened.

Patient was a well-developed and well-nourished girl. T. 104, P. 84, R. 20. Tongue clean, no loss of appetite or excessive thirst; no nausea or vomiting; bowels confined. There was well-marked tenderness and a swelling as large as a hen's egg in the right iliac region just above Poupart's ligament; the swelling was not painful when she was at rest. Heart and lungs normal. Liver and spleen not enlarged. Urine, no albumen or sugar. She had never menstruated.

She was treated by castor oil enemata, calomel, Seidlitz powders, and afterwards by Ht. Mag. Sulph. c. Ferro. On Jan. 13th she got up, and on the 16th she was discharged although there was still some hardness to be felt. The temperature had been normal since the 20th with one exception. However she found she could not get about without pain so she was readmitted on Jan. 20th and a blister applied over the swelling. Her temperature remained normal, and there was no pain when lying in bed. On Jan. 30th she got up but was still in pain so went back to bed until Feb. 14th, when she was sent to the Sanatorium for a fortnight, cured.

Among these fifteen cases it will be noticed that there was only one death, one left the hospital relieved, and the rest were cured. That is, there was a mortality of 6·6 per cent., while 86·6 per cent. were cured, and 6·6 were relieved. But the only death was the one treated surgically, and the *post mortem* appearances impressed me with the belief that his life might have been spared had we adhered to purely medical treatment. It may be objected that the cases recorded as cured were not really cured and may have relapsed, but I do not think that is a fair objection, as the notes shew that the cases which did relapse were re-admitted under my care and finally cured, with the exceptions already referred to. These cases include eleven males and four females, or a ratio of nearly three to one in favour of males. They were mostly young persons, the average age being 23. The duration of the cases varied greatly from nine days to a year, and the average length of treatment was no doubt long, so that perhaps it may be claimed that they would have been cured more rapidly by surgical means. Even if this doubtful proposition were admitted, I think most practitioners will agree that, in view of the inevitable risks of surgical interference, they and their patients would prefer to sacrifice a little time. But that the duration of medical treatment is not necessarily long is proved by such cases as Nos. 2 (twenty days), 3 (twenty days), 5 (fifteen days), 8 (eighteen days), 11 (eight days), and 12 (sixteen days). Surgery could not do better. It should also be noted that, as Case 4 illustrates, the condition may persist for some weeks without important change under treatment and yet get finally and rapidly well.

The plan of treatment adopted has been rest, free evacuation of the bowels, hot fomentations or the ice bag, with the addition, in chronic cases, of repeated blistering over the tumour. In Case 3 spontaneous purging effected a cure without drugs. With respect to this plan, a recent American writer* says, "I have found nothing so effectual as the administration of full doses of sulphate of magnesium. . . . Most writers are opposed to giving purgatives when symptoms of acute inflammation are present, but I have never seen any ill effects from these, and I have on several occasions been deprived of an opportunity to operate by the administration of a few doses of Epsom salts." I would strongly urge a trial of this method in all cases, and I feel that my experience justifies me in holding out the prospect of a very large and gratifying measure of success.

With respect to diagnosis, I do not believe that it is possible to distinguish between cases in which the appendix is really the seat of inflammation and those in which it is not, nor do I consider this of the least practical importance. It may occasionally be possible by rectal examination to feel the enlarged appendix, but as this organ is frequently placed behind the cæcum, it may be impossible to do so, even where, as in children, the size of the pelvis does not lift the parts beyond the reach of a finger of ordinary length.

Nor do I think the history of the patient need frighten us. I have looked into the etiology of my cases, so far as their history threw any light upon the disease, and would classify them thus—

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* W. T. Dodge. Typhlitis, perityphlitis, and allied affections, with special reference to treatment. Medical News, Jan. 3rd, 1891, p. 3.

With a tubercular history . . .	6
„ a rheumatic „ . . .	3
„ a history of typhoid fever . .	1
„ „ „ strain	1
„ „ „ constipation . .	1
Undetermined or obscure . . .	3

The large number with a tubercular history is striking, but by this I do not think we should infer that the inflammatory process in these cases was tubercular, but that we have in them an illustration of the proneness of the tissues of persons of tubercular constitutions to inflame readily, and it is quite possible that if the disease is not speedily cured tuberculosis may supervene, just as it does in the case of a neglected pulmonary catarrh. The case which may have been due to typhoid fever (No. 9) was cured, so that this point in the history need not deter us from the plan recommended. Constipation *per se* has not appeared to me to play so decided a part in the production of this condition as I was at one time disposed to believe, chiefly, I admit, on *a priori* grounds, but that it is a factor I do not doubt.

Finally, the occurrence of high temperature is no bar to successful medical treatment, as is proved by the charts of cases 3 and 4. I have put in one other chart, that of case 11, to illustrate the course of the febrile movement in a simple case.

URETHRAL CARUNCLE.

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THIS interesting little neoplasm has hardly received from modern gynæcologists the attention it deserves. The reasons are not far to seek. Of small size, non-malignant in character, it affects no vital organ, it involves no personal disfigurement, nor does it threaten life. It has consequently been regarded as a trivial matter, and the scientific investigator has "passed by on the other side." And yet I know of very few diseases which cause more physical suffering or more mental distress. On this account, if on no other, it claims more than a passing glance.

It was first described in 1750 by Sharp, who, in his "Critical Enquiry into the Present State of Surgery," wrote: "Small excrescences may occasion violent disorders in so tender an organ as the urethra. I have seen a notable instance in the urethra of a virgin, where they grew in small quantity upon the orifice of the meatus urinarius, and for many months had produced the most excruciating torment, which continued until I had totally extirpated them." The next observer to notice them was Morgagni, from whom I quote the following:—"Examining the body of an old woman, about the year 1751, I met with a triangular excrescence within the external orifice of the urethra, but it was not prominent. . . . There is a red and fungous excrescence, which is of the size of a bean, sometimes to be observed attached to the orifice of the urethra." Hughes, of Stroudwater, Gloucestershire, described it in 1768 as of "a red colour and of a softish spongy texture, with an irregular jagged surface. It was sore when touched, and a bloody serum oozed from it." Other and more recent writers have referred to it, more especially Sir J. Y. Simpson, who was the first to apply to it the name of "urethral caruncle," and who has given us an admirable description of its clinical features.

Much confusion has arisen in consequence of the multiplicity of names which have been given to this growth, and also because the term caruncle has been loosely applied to all tumours of the female urethra. Thus vascular caruncle has also been termed "vascular tumour of the urethra," "painful tumour of the urethra," "papillary polypoid angioma," "fungoid excrescence," "strawberry growth," "raspberry tumour," "cellulo-vascular tumour," etc. It must further be remembered that although the vascular caruncle is by far the most common of all the tumours affecting the urethra, there are numerous other tumours occasionally found there, tumours to which the term caruncle ought not to be applied.

Skene, following Winckel, classifies the neoplasms of the urethra as follows:—

1. *Papillary.*—Condyloma.
2. *Glandular.*—Cysts, myxo-adenoma, mucous polypi.
3. *Vascular.*—Angioma, varices, phlebectases.
4. *Areolar (connective tissue).*—Fibroma, sarcoma.
5. *Epithelial.*—Epithelioma, carcinoma.
6. *Compound.*—Erectile tumours, and the papillary polypoid angioma *(vascular caruncle).*

They may occur at any age after puberty. They have been observed in girls in their teens, and also in very old women. In one case the patient was ninety-two years old. But they undoubtedly occur most frequently in women about the change of life. They are seen more frequently in married than in single women, but this is possibly because for obvious reasons they produce more distress in the former, whilst most single women shrink from consulting a surgeon until driven by the agony of their complaint.

Numerous causes have been assigned by various authors. The following have been given as predisposing causes:— "Laxity of the urethral tissues," "a tendency to a varicose condition of the parts," "catarrh of the urethra," and "dislocation of the urethra." Whilst amongst the supposed exciting causes we may mention "temporary or chronic congestion of the urethra during pregnancy," "ovarian and uterine tumours," "obstructed portal circulation," "injuries to the parts during labour, or from external violence," "the irritation of acute or chronic urethritis," "gonorrhœa," "syphilis," and "masturbation." To say the least it is exceedingly doubtful if the connection between the majority of the above causes and the disease is more than accidental. On the other hand I think it likely that in many cases the exciting cause is a highly acid or irritating condition of the urine. The following case illustrates this point. The patient was a stout plethoric lady, æt. 45, inclined to gout. She had had, many years before, an attack of acute gout in the great toe. Some years later she suffered from gouty psoriasis. She had the change of life when she was forty-three years old. For some months before any symptoms of caruncle appeared, the urine was highly concentrated, loaded with minute crystals of uric acid, and very irritating. At first the passage of urine only caused a sense of heat and smarting. Later in addition there appeared acute pain during the act, and various other symptoms of caruncle. A local examination was made, the growth discovered and destroyed. At the same time treatment was directed to the removal of the uric acid, with the result that for many months the urine was nearly free from it. The uric acid then returned, and very soon afterwards the patient began to complain again of symptoms of caruncle, which was again found and removed. This sequence of events was repeated as many as six times, the apparent exciting cause of the new growth being on every occasion the irritating condition of the urine due to an excess of uric acid.

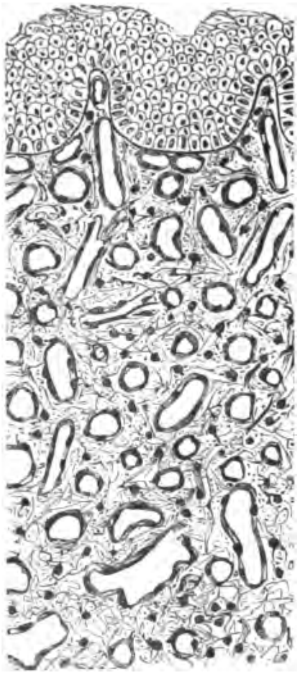
But in what way may the uric acid cause the disease? At the end of each act of micturition a drop of highly concentrated urine loaded with sharp crystals is left at the meatus. The crystals settle on the mucous membrane, and possibly lodge in the glandular crypts which are so abundant there, and the repeated irritation of their presence determines the new growth. This irritation is partly mechanical, partly chemical. Whether or not it actually causes it, certain it is that after the growth has developed a highly acid urine frightfully aggravates the patient's sufferings.

What, then, are the symptoms complained of which lead us to examine the patient? The outstanding one is pain. The patient's sufferings are out of all proportion to the size of the growth, and are, in many cases, truly agonising. The face of the patient tells a tale of past and present distress. She is irritable, anxious, low-spirited, often the prey of the dreadful suspicion that she is suffering from cancer. So terrible has been the agony and so great the mental depression, that cases have been recorded where women have committed suicide rather than continue to endure their woes. The patient walks in a peculiar, slow, constrained fashion, as if afraid to move one thigh upon the other, the chief movements being at the knee joints. If asked to sit down she does so "gingerly," lowering herself slowly into the chair, on the very edge of which she rests upon one hip, or with her thighs wide apart. When asked what is the matter, she replies that there is "something in the privates," in many cases precisely localising it "in the water passage." The greatest distress is produced by the act of micturition. The passage of urine is often so painful that the patient will hold her water for many hours, until the bladder is greatly distended, and then she will lock herself in her bedroom and scream as the urine passes. Occasionally retention of urine occurs, and the surgeon has to draw off the water. There is frequently slight, occasionally severe hæmorrhage from the growth. From the exquisite tenderness to touch there is extreme dyspareunia—in fact, in most cases the woman absolutely refuses to permit coitus. Very many cases of so-called vaginismus are really cases of urethral caruncle, in which the growth has not been looked for or has been disregarded There often are various reflex pains in the back, groin, and suprapubic region, and a peculiar lancinating pain which runs down the course of the small sciatic nerve, often as far as the back of the heel. In one case that I observed the first symptom of the recurrence of the growth was this "pain running down to the heel." The growth was removed and recurred several times, and each time its return was heralded by this peculiar pain. It should be remembered in this connection that the external genitals receive their nerve supply to a large extent from the long pudendal branch of the small sciatic nerve.

The diagnosis is made complete on inspecting the external genitals. On drawing apart the labia, there is seen at the meatus urinarius, or just within it, a small bright crimson growth. There may be several, but usually there is but one. It varies in size from a pin's head to a cherry, but is generally about the size of a pea. It is usually situated on the posterior lip of the meatus, is frequently pedunculated, and has often a curious triangular outline, being "shaped like a cocked hat and attached by one corner." It is exquisitely tender to touch, very soft and friable, and bleeding readily on manipulation. In some cases it is situated in the urethral canal, and is not visible on inspecting the external genitals.

It is often associated with patches of vascular degeneration of the vestibule—the condition so graphically described by Mr. Lawson Tait. I regard this disease as practically identical with caruncle, except that in the latter the disease is limited and developes as a localised neoplasm, whilst in the former the disease is spread out in flat patches on the mucous membrane of the vestibule. The relationship between these two diseases will be more evident after I have described their microscopical structure.

If carefully prepared sections of a caruncle are examined with a moderate power, the growth is seen to consist of very numerous and widely dilated capillary loops embedded in a delicate connective tissue stroma. (See fig. p. 151) The surface is raised into papillæ, which are covered by a thin layer of stratified squamous epithelium. This epithelium rests on a well-marked basement membrane. The dilated capillary loops have thicker walls than normal capillaries. They are lined by endothelium, outside which is a comparatively thick homogeneous hyaloid coat, but nowhere can non-striped muscular fibres be demonstrated. The capillary loops run up close to the surface, so that in many places they are only separated from the epithelium by the basement membrane. The stroma contains numerous small nucleated cells, which are probably young connective tissue corpuscles. In the spaces between these cells and the capillary loops are to be seen numerous fine fibrils, which run irregularly in all directions. Some at least of these must be nerve fibrils, although it is difficult to demonstrate this point satisfactorily. A caruncle is so extremely sensitive to touch, and pain is so marked a feature in the clinical history, that there



Microscopic Section of Urethral Caruncle.

must be a very rich nerve supply. There is no sharp line of demarcation between the caruncle and the healthy tissues from which it grows. The vessels gradually assume the characters of normal blood vessels, and the stroma becomes denser, coarser, and less cellular.

I have already indicated that there exists a close relationship between urethral caruncle and vascular degeneration of the vestibule. They frequently co-exist in the same patient They are both apt to occur about the same period of life—the menopause. They both are the cause of much suffering; in both there is scalding pain during micturition, and intercourse is so painful as to be unendurable. Both are extremely apt to recur after removal, and when examined microscopically the resemblance is still more remarkable. Mr. Lawson Tait removed from a patient one of the patches of vascular degeneration of the vestibule, and made microscopic sections. He thus describes the appearances:—"At the site of the spot all the textures had been removed save a few fibres, the walls of the capillaries, and the superficial epithelium, under which the loops of capillaries with thinned and dilated walls lay almost unprotected. All traces of gland structure had disappeared. The gold staining also showed nerve fibres which lay amongst the capillaries almost as unprotected." It will thus be seen that a patch of vascular degeneration is practically a caruncle spread out in a thin sheet. Just as the caruncle is limited to the orifice of the urethra, so vascular degeneration never affects any other part save the vestibule.

Now the vestibule (including the orifice of the female urethra) is developed from the uro-genital sinus of the fœtus, and is the representative from an evolutionary point of view of the uro-genital sinus of the lower animals. This sinus is the common cavity into which the urinary and genital ducts open. In the male the uro-genital sinus is represented by the membranous and the lower half of the prostatic urethra (the point of union of the urinary and genital canals). It is interesting to observe that Sir Henry Thompson describes what is practically a caruncle as occasionally found in this portion of the male urethra. In his description of urethral caruncle in the female he says:—"The resemblance which these growths possess to a florid vascular tumour before described in the urethra of the male cannot but be remarked."

Perhaps the most remarkable feature in the clinical history of urethral caruncle is the frequency with which it returns after removal. Although it never invades the surrounding tissues, and although it never infects distant organs, it is almost malignant in the terrible persistency with which it recurs.

The view has been advanced that at each recurrence the tumour springs from a fresh portion of the orifice of the urethra, and that a permanent natural cure is not obtained until the whole of the mucous membrane of the meatus has, at one time or other, been the seat of the disease. Mr. Lawson Tait apparently favours this view, for he says: "It is quite possible that they are progressive, in the same way as is the vascular degeneration of the vestibule, for their recurrence is not the recurrence of malignancy, but appears to be rather the invasion of another though neighbouring district."

The treatment is simple: it consists in the *complete* removal of the growth. Many authors recommend various caustics, such as nitric acid, nitrate of silver, chromic acid, caustic potash, and carbolic acid. They are all unsatisfactory; at the best they merely palliate, and in many cases they aggravate the disease. Bougies containing cocaine give, for a time, remarkable relief, and at least enable the patient to pass water with some degree of comfort. Unfortunately, in many cases after the drug has been used for some time it fails to produce any local anæsthesia, and then often causes actual irritation. Many are the methods recommended for the extirpation of the growth. Some ligature its base, others remove it with the wire snare. The electricians puncture it with needle-shaped electrodes, and try to destroy it by means of electrolysis. Some surgeons content themselves with scraping it away with a sharp spoon or curette; others sear it with a small actual cautery—and the favourite seems to be a red-hot knitting needle—or they use the galvano cautery or the more convenient Paquelin's cautery. A very good plan is to snip off the growth with scissors and to sear the base with Paquelin's cautery. But the tendency of the disease is to return even when the last plan is adopted.

Keeping in mind the terrible suffering it causes, the persistency with which it recurs, and the progressive manner in which it involves new portions of the orifice of the urethra at each recurrence, I strongly recommend the following method of removal. The patient is anæsthetised and placed in the lithotomy position. An elliptical incision is made in the mucous membrane of the vestibule around the meatus, and about one-sixth of an inch distant from it. By means of a pair of fine ophthalmic scissors this incision is deepened, and the entire lower end of the urethra for about one-third of an inch of its extent is separated from the surrounding tissues. This dissection must take place outside the muscular coat of the urethra. The piece of the urethral canal thus isolated is gently drawn down and removed by a snip of the scissors. The edge of the divided urethral mucous membrane may then be united to the edge of the divided vestibular mucous membrane by a few sutures, or the raw surface may be touched with the cautery and left to granulate. It will be seen that this operation resembles on a small scale the operation of excision of the rectum for cancer. The only objection to this free removal is the possibility of the formation of a cicatricial stricture. This can be prevented by the regular passage of a soft bougie, a proceeding which the patient may be taught to carry out for herself. If a stricture should form, it may be easily remedied by slitting the urethra up for about a third of an inch

If any exciting cause can be discovered, such as an excess of uric acid in the urine, appropriate medicinal treatment must be used to remove it.

The prognosis as to the likelihood of recurrence after removal should be guarded. The patient should be warned that it may return after an interval of months or years, otherwise the surgeon will be accused, and sometimes justly, of not having removed the whole of the growth.

REPORTS OF CASES.

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OBSTETRIC AND GYNÆCOLOGICAL CASES.

BY C. E. PURSLOW, M.D. LOND.
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Placenta prævia; arm presentation; spontaneous detachment of placenta before birth of child.

On June 3rd I received the following message from a midwife of the Lying in Charity—"Please come at once, arm presentation, hæmorrhage." I found that the patient, who was at the full term of pregnancy, had been in labour twelve hours. Two hours previously hæmorrhage had come on, and was soon followed by the "bursting of the waters." Patient had lost a large quantity of blood at first, but the hæmorrhage had almost ceased when I arrived. She was æt. 40; 11 children previously, including one footling and one placenta prævia.

On examination the left arm was found presenting at the vulva, thumb pointing to the left side of the mother. When the hand was supinated the palm was directed forwards, showing abdomino-anterior position with head in left iliac fossa. On passing the hand into the vagina the os was found to be not quite fully dilated; the placenta was partly protruding through the os, and appeared to be entirely separated, and was removed, leaving however almost the whole of the membranes remaining in the uterus. The breech could be easily felt on abdominal palpation lying to the right and the head to the left; the uterus moulded on the body of the child; all liquor amnii having apparently drained away.

After a short interval, during which some brandy was given, the patient being very faint and pulse rapid and weak, chloroform was administered to the full extent. I then introduced my left hand into the vagina and passing it on into the uterus by the side of the prolapsed arm and over the abdomen of the child, seized the left knee and brought it down and then seized the left foot. By traction on the foot combined with depression of the breech with the external hand the child was made to rotate without much difficulty, and the presenting arm went up into the uterus. The trunk of the child was then delivered, the arms being swept over the face by the fore-finger, and the head was delivered with the occiput anterior a finger being passed into the mouth to ensure flexion. The left hand was again passed into the uterus and the whole of the membranes removed in one piece The uterus, which contracted well on the hand, was washed out with hot water, a dose of ergot given and the binder applied. The patient made a perfectly normal recovery.

Spontaneous separation and expulsion of the placenta before the birth of the child in cases of placenta prævia is somewhat rare. Sir James Simpson collected 141 cases of this occurrence from various authors with a maternal mortality of one in ten. He observed that in nearly all these cases the hæmorrhage ceased when the placenta was expelled, and as the maternal mortality of cases treated by the then established rules was one in three he brought forward a method of treating placenta prævia by detaching the placenta from the lower uterine zone by the finger. This treatment appears to be specially applicable to central or complete placenta prævia, but possesses the obvious disadvantage that the child will certainly be born dead.

Case 2.—*Fibrinous Polypus; removal; recovery. Uterus discovered to be bicornuate.*

S. B., æt. 38, admitted to the Queen's Hospital June 20th, 1891, with the following history:—Married 14 years; nine children born at term; two abortions (at first and last pregnancy). Of the nine children born alive six died within a few hours of birth. At the last confinement but one the child presented transversely, and patient states that during the first four months of the pregnancy she had periodical losses of blood. Nine weeks ago, when two months advanced in pregnancy, patient commenced to lose blood, and had frequent though slight hæmorrhage unaccompanied by pain almost daily for five weeks. She then miscarried, fœtus and placenta coming away. From her description the fœtus would appear to have been at between the third and fourth month of development.

Present condition.—Patient very anæmic; uterus enlarged; os admits the tip of the finger which touches a soft mass within the uterus. Has no pain. Hæmorrhage considerable.

June 22nd. Patient placed under chloroform; os dilated with finger; and the mass, which was about the size of a walnut and attached to the right side of the fundus, removed by finger and forceps. Uterus washed out with hot water to which tinct. iodi had been added, and vagina plugged with iodoform gauze.

While exploring the uterus with the finger I was surprised to find that it was bicornuate, pregnancy had taken place, and the polypus had formed in a large right cornu, but there was a very distinct left cornu which admitted the tip of the index finger, and was entirely separate from the larger right cornu. This was confirmed by Mr. Green, the Obstetric House Surgeon The external contour of the uterus gave no trace of bifurcation, and was quite normal. The mass removed proved to be principally partially organised blood clot, with a few fragments of placental tissue. The vaginal plug was removed the next morning. The patient had no more hæmorrhage. She had a rigor, temperature rising to 103° F. on the day but one after the operation. As this was thought to be due to some retained clot becoming septic, the uterus was again washed out with iodine water, and temperature fell to normal, and with that exception was normal throughout. Patient left the Hospital quite well on July 9th.

The interesting point about this case is the existence of the separate rudimentary left cornu of the uterus, as cases in which such a condition is diagnosed during life must be very uncommon. It is evident that pregnancy had always occurred in the larger right cornu, the other being practically an offshoot from this. This condition of arrested development has been held to explain some of the cases in which menstruation has persisted during pregnancy, the menstrual blood coming from one horn of the uterus, and the fœtus developing in the other, though it is difficult to explain the solitary instance in which this occurred in this patient on that hypothesis, as the same condition of the uterus was present in all the pregnancies.

PERISCOPE.

URINARY AND RENAL DISEASES.

BY ROBERT SAUNDBY, M.D., F.R.C.P.

DIABETES.

Some Points connected with the Pathology and treatment of Diabetes.—A. E. Wright *(Brit. Med. Jour.*, 1891, vol. i., p. 787). —According to Kulz, the diabetic organism retains the power of assimilating lævulose, but has partly or entirely lost the power of assimilating dextrose. The author thinks a diabetic should be fed on proteids, fats and lævo-rotatory carbohydrates; but lævulose, as such, does not occur in nature; inulin is found in dahlia tubers, in dandelion, chicory, and other roots, and Kulz has pointed out that it can be baked into good bread. He also suggests that Jerusalem artichokes in the spring contain only lævulin and inulin. Malt sugar is most harmful, being entirely dextrose: cane sugar and grape sugar are less, and contain less unassimilable sugar than an equal weight of starch; so that fruit may be more readily allowed to a diabetic than bread. Milk sugar contains equal parts by weight of galactose and dextrose; but it has not yet been ascertained that galactose is an assimilable sugar. He recommends the precipitation of the fat and casein by adding one to two parts per thousand of acetic acid. The coagulum is to be strained through calico, washed and re-dissolved in a one per cent. solution of the following mixture of salts:—

Sodium chloride	11·5 parts.
Potassium „	9·9
Monopotassium phosphate ...	13·8
Dipotassium „ ...	10·0
Potassium citrate	5·9
Dimagnesium phosphate ...	4·0
Magnesium citrate	4·4
Dicalcium phosphate	8·0
Tricalcium „	9·6
Calcium citrate	25·5
Calcium oxide	5·5
Sodium carbonate	40·0

A trace of saccharin may be used to sweeten the milk, and the solution should be warmed to about the blood temperature.

In the examination of a case he found that the relation of acetone to the excretion of sugar was neither direct nor inverse, but that it varied directly with the nitrogen excretion, so that he thinks it indicates a need for decreasing the nitrogenous food and increasing the fat or carbohydrates. The concluding part of the paper deals with phloridzin diabetes, and the author contests the statement of von Mering that in this condition after five days' inanition the liver of an animal is free from glycogen. He does not answer the question where the sugar comes from in phloridzin diabetes. He finally throws out a suggestion that by the use of the late Dr. Wooldridge's method of coagulating the blood within the vessels of the living body some light may be thrown on the problems of diabetes.

Glycosurie und Diabetes.— Fritz Moritz (*Munchener med. Wochenschr.*, Nos. 1 and 2, 1891).—The question whether grape sugar is a constituent of normal urine has been probably settled by this author's discovery. The urine of quite healthy persons may form a characteristic combination of grape sugar with phenylhydrazin, the so-called phenylglycosazone. Fortunately our clinical tests are not sufficiently delicate to detect these small traces. But this shews that glycosuria is not identical with diabetes, and renders it probable that there is such a condition as simple glycosuria, where the excretion of sugar in the urine is unattended by polyuria, thirst, or any constitutional symptoms. It is, however, difficult to define simple glycosuria, though it is, as a rule, a transient condition. He divides it into two groups—1, glycosuria occurring under various pathological conditions; and 2, glycosuria under physiological conditions. Under the pathological conditions which give rise to glycosuria, he enumerates injuries and diseases of the nervous system, extirpation of the pancreas, various poisons, phloridzin, and various other local and general diseases, such as cirrhosis of the liver, gout, scarlatina, &c. In the second class he places the glycosuria of the puerperal state, of lactation, and after eating sugar or sweets. He examined the urine of eleven persons after suppers consisting of abundant sweet dessert and iced sweet champagne; in five of them the urine contained sugar, which disappeared in two or three hours. He thinks that it would have been observed before but for this temporary character, but Rosenbach has observed it after taking sweets, and Kretschmer after drinking beer. The prognostic significance of such occurrences has been variously interpreted. Frerichs regards them as evidence that the nervous system is involved; Cantani thinks that they indicate a predisposition to true diabetes; Elstein thinks that they should be regarded with distrust, as it is impossible to say that they may not be connected with a tendency to diabetes. But Moritz thinks that this is going too far, as glycosuria may occur transiently in many conditions, but *persistent* glycosuria is always serious, and this is diabetes which may be divided into a mild and a severe form He describes a case which was regarded as diabetes insipidus, because the amount of sugar which was excreted intermittently was too small to be detected in the mixed urine of twenty-four hours, but was found by examining the specimens kept separately for periods of three hours. He agrees with most authors that there is no essential distinction between the mild and severe forms, as the former may pass into the latter.

In a second lecture on tests for sugar he points out that Trommer's test is open to the objection that there are many other substances commonly present which reduce cupric oxide, and that in the presence of ammonia salts precipitation may not occur, but as a rule there is not enough of the latter. He thinks Fehling's solution often gives a reduction with normal urine. The bismuth test is open to the same objection. Moore's test is of no use to detect small quantities of sugar as all urines turn brown with it and there is no line of distinction between this and the brown coloration from sugar. The phenylhydrazin test he does not consider practical, as (*vide supra*) with it he detected sugar in normal urine. He therefore recommends fermentation as the only certain test. For this he recommends the following simple method:—A test tube is filled to the brim with the mixture of yeast and urine, and then closed with an indiarubber cork which is perforated by a knee-shaped glass tube. The latter is filled by the urine when the cork is pushed home, and the apparatus contains no air but may be inverted without a drop escaping. It is placed in a glass and left in a warm place to ferment, which if there is only a little sugar may require from eighteen to twenty hours. In normal urine a very little gas may be developed, and on this account a control experiment should be made with normal urine, and another control tube should be prepared to which a little sugar has been added. The latter shews us whether the yeast is active, or that the urine is fermentible, which may not be the case when salicylic acid, salol, or other antiseptic drugs have been taken. About 2 grms. (30 grains) of dried yeast should be added to 100 cc. of urine. He recommends that this test should always be combined with a delicate reduction test such as the bismuth test.

Studien zum Diabetes.—C. Posner and H. Epenstein. (*Berliner klin Wochenschr*). 1891, Nos. 26 and 27.—*On the intensity of* *sugar excretion in diabetes.* They point out the necessity of examining *not only* the entire urine of twenty-four hours, but also special specimens of the day's urine, particularly the morning urine (Seegen), and for purposes of comparison the specimens of the same period must always be analysed. These rules are generally recognised. According to their observations however while the highest percentage was found in the after breakfast urine the absolute amount was largest in the evening. But these figures are not strictly comparable because the duration of the period of excretion was not identical. If we reduce them to the hourly quantiites we get the *intensity of sugar excretion*, and this gives the maximum as occurring in the evening, and the least in the early morning. In another case the maximum *percentage* was in the evening and night, the difference being as much as two or three per cent., and the difference of absolute amount and intensity was quite as striking. They think that a case in which the excretion of sugar, as in this case, was so large and *independent of food* should he regarded as very severe.

The most severe case was one in which the percentage varied from 3 to 7·2, the absolute amount and intensity followed curves parallel to the percentage, the minimum being in the early morning from five to seven o'clock, and the maximum in the evening about nine o'clock. They could not observe any constant relation between the specific gravity and the amount of sugar. They think that every case should be watched in this way till the nature of the curves has been established.

Zur Etiologie des Diabetes. Richard Schmitz. (*Berlin klin. Wochenschr.* 1891, No. 27.)—This paper is based on the study of 2,500 cases of diabetes observed by the author, who practises at Neuenahr, whither many diabetes resort for treatment. He distinguishes between idiopathic diabetes and melituria or melitæmia occurring in the course and as a complication of other diseases. Of the former he has seen 2115 cases. He attributes great importance to a *predisposition*, without which he does not think idiopathic diabetes can occur. Of his cases, 1206 were males, and 909 females. Idiopathic diabetes is very rare in childhood, rare in adolescence, but increases in frequency after the twentieth year; but it is often overlooked in children, and his opportunities may not have been favourable for seeing it. He arranges his cases according to age, thus—

From 1 to 10 years	10	From 50 to 60 years	678
„ 10 „ 20 „	75	„ 60 „ 70 „	210
„ 20 „ 30 „	178	„ 70 „ 80 „	60
„ 30 „ 40 „	322	„ 80 „ 90 „	2
„ 40 „ 50 „	580		

He thinks idiopathic diabetes is rare in the inhabitants of Westphalia, Rhineland, and Bavaria, while it is common in Malta and South Italy, where it is as deadly as is tuberculosis in Northern Europe. But the Swedes are frequently diabetic, an observation confirmed by Swedish physicians and especially by Prof. Malmsten, of Stockholm. It is also common in Jews, whether of German or Italian birth. Cantani attributes the frequency of the disease in Malta and South Italy to the excessive use of saccharine foods. Schmitz admits that Maltese, Italians, Jews, and Swedes eat a great deal of sugar, and also suffer from diabetes, but all Maltese, Italians, Jews, and Swedes who eat a great deal of sugar do not become diabetic, while the disease is not common in many parts of East Germany and in North America, in spite of much sugar eating. Moreover, he has known diabetic Italians, Maltese, Swedes, and Jews who were diabetic, though they did not eat much sugar. He thinks that the liability depends on the *race*. He has observed *hereditary predisposition* in 998, nearly one half of his cases. He has seen 5, 6, up to 8 or 10, and even 12 cases in one family. These facts are all the more important, as many cases are no doubt overlooked. In many cases it was the brothers or sisters who were diabetics, and not the parents or grandparents. In these cases he thinks the predisposition was congenital but not hereditary. Severe psychoses, especially melancholia, frequently leading to suicide, occurred in 428 diabetic families, while in the families of 263 diabetics there were no cases of diabetes, but one or more of insanity; also morphinomania, dipsomania, and onanism are frequent in diabetic families. He would add that the disease apparently occurs frequently in gouty and tubercular families.

There can be no doubt that eating much sugar is injurious to diabetics, but the habit often long precedes the outbreak of the disease, and we must not confound *post hoc* with *propter hoc*. In 641 cases for some time before the occurrence of diabetes there had been much sugar eating. He thinks if it had been excessive it might have given rise to gastro-intestinal catarrh, but not to diabetes. He was a long time in North America, and saw that the Yankee, big and little, was as much addicted to the debauchery of sweets as the Maltese or South Italian; they have them for every meal, and some women and children are all day long eating candies or chocolate. In spite of this, and though they suffer much from dyspepsia, he has never heard that diabetes is very frequent.

He regards care, worry, serious emotions, and nervous shocks as conditions which may aggravate existing diabetes or produce it. He has often seen anger or fear increase the quantity of sugar. After the great electoral campaign of 1887 many of his patients complained of increased sugar excretion and impairment of general health. He attributes this partly to the "drinks" that would be numerous at such a time. But a great shock may profoundly affect a diabetic's nervous system without increasing his glycosuria, as in a case related where the death of an only son, the support of the family, threw a diabetic into a state of melancholia, but the sugar, which had disappeared, did not return. He refers to his paper on the communicability of diabetes, and he states that he thinks these cases must be merely coincidences. He says the etiology of idiopathic diabetes is so like that of tuberculosis that he wonders whether it also may be due to a micro-organism.

Respecting his cases of secondary glycosuria, 155 occurred as a complication of gout, 128 in obesity, 17 in cancer, 16 in valvular disease of the heart, 12 in brain syphilis, 10 in morphinomania, 9 in liver cirrhosis, 9 in spinal cord diseases, 1 in waxy liver, and 1 in Addison's disease. Besides these, 6 occurred after a fall on the head, 4 after a blow on it, 1 after cerebral concussion in a railway accident, and 3 shewed themselves in convalescence from typhus. He should call it melitæmia in disease of the pancreas if he could diagnose that condition.

Ueber das Verhalten der Magenfunctionen bei Diabetes mellitus. Gans *(Verhandl. d. Congr. f. inn. Med.* 1890.*)*

A series of investigations was made to determine whether by a rational observation of the secreting and motor functions of the stomachs of diabetics with careful simultaneous examination of the urine it would be possible to determine the proper diet for each patient. Ten diabetics in all stages of the disease were examined. The following results were arrived at:—

1. The reaction with litmus was in one case alkaline, in all the other nine, acid.

2. The ordinary tests for HCl (Resorcin, congo-red, phloroglucin-vanillin, tropæolin) gave in six cases positive, and in four cases negative results.

3. The total acidity (determined by triturating with 1–10 normal soda solution) varied between 15 and 90 (normal about 60.)

4. Organic acids, reckoned as acetic acid were from 0·03 to 0·1 per mille.

5. Lactic acid (Uffelmann's test) was present as a rule in moderate quantities.

6. Diacetic acid was never found even when it was present in the urine.

7. The digestive capacity of the gastric juice was always positive and normal.

8. The milk curdling capacity was always normal, even in the case with alkaline reaction.

9. The salol test after Ewald's method for determining the motor sufficiency of the stomach gave always a normal result.

No connection could be established between the condition of the gastric juice and the amount of sugar in the urine, nor any regular relation between the presence of acetone in the urine and the gastric functions The frequent absence of free HCl in the gastric contents was very striking (30 per cent.). On the other hand, in 40 per cent. there was increased secretion of gastric juice. The motor functions were always well preserved even in those whose secreting functions were diminished.

The conclusion to be drawn is that a certain number of diabetics can bear very well the albuminious diet usually prescribed, others not. It is therefore necessary to individualise, and not to think that all can take a uniform diet.

Ueber Magenthatigkeit bei Diabetes Mellitus.—G. Honigmann. (*Deutsche Med. Wochenschr*, 1890, No. 43).—Seven cases, partly moderate cases of diabetes (6 men 1 woman) were examined carefully as to their stomach functions. Forty-five separate examinations were made. The reaction to colouring agents was in four individuals normal, and there was more or less increased acidity (0·2 to 0·4 per cent. HCl), in the other three no colour reaction could be obtained. These had, very curiously, scarcely any remains of food in the stomachs even a short time after an abundant meal so that trituration was quite impossible. One of the last named patients shewed constantly very small acidity (0·04 to 0·09 per cent.); the second higher (0·14 to 0·18), and the third had too little stomach contents to triturate. A fourth shewed very varying amounts. A direct relation between the severity and form of the disease on the one hand and the state of the stomach functions on the other could not be ascertained. But the three patients with hyperacidity had been ill a shorter time than those with feeble or varying acidity.

1. *Sur le pouvoir glycolytique du sang et du chyle.*—Lépine and Barral. *Comptes rendus*, t. CX. 1890. 2. *Le ferment glycolytique.* R. Lépine. Paris: 1891.

1. In this note Lépine and Barral pursue their researches into the normal existence of a glycolytic ferment in the chyle, derived from the pancreas. Experiments made with the chyle or blood of a dog, shewed that in health either possesses the power of rapidly destroying sugar, but that this power is absent

in the blood or chyle of dogs, rendered diabetic by ablation of the pancreas or by phloridzin. This is also true to a certain extent of the blood of an asphyxiated dog. The tissues also play an Important part in the destruction of sugar in health.

2. In this pamphlet, Lépine draws especial attention to the diminution of the glycolytic power of the blood in all the cases of diabetes and even in all the transitory hyperglycæmias and glycosurias which he has examined. He then describes the method by which Barral estimates the glycolytic power. Finally, he argues in favour of the origin of the glycolytic ferment in the pancreas, but not exclusively. He makes the statement that he has seen the pancreas atrophied in cases of *diabète gras.*

Contribution à l'étude des lésions du pancréas dans le diabète.—G. Lemoine and M. Lannois (*Archives de médecine expérim.*, 1891, No. 1).—The authors, after recapitulating the little that has been done on this subject (without mentioning, however, the Bradshawe Lecture of last year), remark that the pancreas may present no naked eye change although its structure is greatly altered. In one case only of the four examined by them did the pancreas seem a little hard and flattened from before backwards. In three cases the clinical type was that of Lancereaux's *diabète maigre;* the other was a very chronic case, in which the liver and kidneys presented changes analogous to those in the pancreas. In the other three the liver shewed some little points of sclerosis, but nowhere surrounding a lobule, and the kidneys were quite normal; but the pancreas presented most advanced changes, so that they regarded it as primary. It was identical in its situation in all cases. The pieces were preserved in Müller's fluid, and stained with eosine-hæmotoxylin and alum-carmine. The chief fact was a diffuse interstitial pancreatitis with degeneration of the cells. (These lesions were described minutely in the Bradshawe Lecture, *Lancet*, August 23rd, 1890.)

Extirpation du Pancréas. Diabète sacré expérimental.—M. E. Hédon (*Archives de médecine expérim.*, 1891, No. 1).—After a brief account of the history and the method of operating, he describes the results. These were that diabetes always followed on the day or so after the operation, the amount of sugar being usually about 5 per cent. The other symptoms of diabetes—hunger, thirst, and polyuria—were also present, and, in spite of the great quantity of food taken, the animals emaciated rapidly. Acetone was present in the urine. No glycogen could be found in the liver of a dog killed towards the end of his illness. The diabetes thus produced is permanent, and corresponds to the type described in man as *diabète maigre.* In one case the glycosuria was intermittent for a time. The gland must be extirpated, no other lesion sufficing, and the extirpation must be *complete.*

Morbus Basedowii kompliceret med Diabetes mellitus.—(*Ugeskr. f. Läger.*, 4, R. xxii., 4, 5, 1890.)—The author records two cases of exophthalmic goitre in the course of which diabetes supervened. (Such cases have been described before by Manby and Barnes.)

Diabetic retinitis.—J. Hirschberg (*Deutsche Med. Wochenschr.* Nos. 51 and 52, 1890).—The author recognises three principal forms: 1, a peculiarly characteristic inflammation attacking the central region of the retina, accompanied by small bright spots, and generally also by minute hæmorrhages; 2, hæmorrhages into the retina followed by inflammatory and degenerative changes; 3, a rarer form of inflammation with degenerative changes. It occurs generally in elderly persons, affects both eyes, diminishes acuity of vision, and first appears as white shining spots. The optic disc usually escapes; there is no marked cloudiness nor are there any very marked changes in the vessels. The condition always indicates that the disease is advanced. Hæmorrhages occur in small round patches, or if they attain any size may cause cloudiness of the vitreous, glaucoma or infarction; they are even of more grave prognosis than retinitis.

Xanthoma diabeticorum und seine Verwandtschaft mit gewöhnlichem Xanthom. (*Monatshefte f. prakt. Dermat.* 1890, XII., No. 1.)—Robinson records the case of a diabetic man in whom an eruption appeared, at first on his seat and lumbar region, but within four weeks extended to the extensor surfaces of his forearms and thighs, to the calves of his legs, and then with less intensity all over the body, except the scalp. There were many hundred hard and sharply defined nodules with yellow centres and red areolas, sometimes discrete sometimes aggregated, the difference in colour being very marked on pressure. The small papules were conical, the larger flat; in some the surface was uneven, caused by furrows in which capillaries ran. Touching the skin caused a burning sensation, and at times severe itching occurred. On strict diet and the use of arsenic the skin disease disappeared, but returned when the treatment was stopped, only however on the extensor aspects of the forearms. With renewed treatment it again disappeared and had not returned, though sugar was still present in the urine. Histologically the nodules showed the characteristic structure of genuine xanthoma.

Action de l'extrait de valériane sur la destruction de la glycose dans le sang. L. Butte. (*Comptes rendus*, CXII., No. 6.)—Butte states that extract of valerian when added to blood delays the glycolytic action of the ferment present, and that this occurs, though to a slighter extent, when a watery solution of the extract is injected centripetally into the femoral vein.

Eine Modification der Phenylhydrazin-probe auf Zucker.—W. Havelburg. (*Centrlbl. f. klin. Med.*, 1891, No. 5).—The author recommends that after boiling equal volumes of urine and phenylhydrazin solution the mixture should be allowed to go cold and then be shaken with chloroform. If sugar is present a layer of characteristic canary-yellow crystals form upon the sinking chloroform and can be proved by microscopic examination, but even with the naked eye they could be recognised in cases where Fehling's test gave no result.

Ein neues Verfahren zur quantitativen Bestimmung des Acetons im Harn.—Z. Dmochowski (*Gaz. lek.* x. 37, 38, 1890).—The method is the following: a definite quantity of iodine solution, ammonia, nitric acid and urinary distillate are placed in a vessel. After some minutes iodoform is formed if acetone is present. The fluid is filtered and the remaining iodine estimated. As we know how much iodine was employed and how much is left after the reaction, the difference gives the quantity combined with acetone. As three parts of iodine combine with one part of acetone to form iodoform, it is easy to reckon the amount of iodoform in the distillate. Von Jaksch by Lieben's method found acetone in normal urine, and Dmochowski examined four healthy urines which all gave a reaction with Lieben's method but in no case with his.

Ueber die Behandlung des Diabetes mellitus mit Syzygium Jambolanum.---Lewaschew (*Berl. klin. Wochenschr*, 1891, No. 8.)—Lewaschew has treated eight cases by this drug, and though sugar in no case completely disappeared, there was always marked improvement. The doses he used were from 20·0 to 40·0 per diem (300 to.600 grains daily). He attributes the unsatisfactory results of other observers to too small doses or bad quality of the drug.

BRIGHT'S DISEASE, AND ALBUMINURIA.

THE ETIOLOGY OF BRIGHT'S DISEASE.

1.—*Zur Etiologie des Morbus Brightii.* Agnes Bluhm. (*Deutsches Arch. f. klin. Med.*, XLVII., 3 and 4, p. 193. 1891.)

2.—*Zur Aetiologie des Morbus Brightii acutus nebst Bemerkungen über experimentelle, bakteritische Endokarditis.* Julius Mannaberg. (*Zeitschr. f. klin. Med.*, XVIII., 3 and 4, p. 223. 1890.)

3.—*Ueber die Aetiologie, Pathologie, und Therapie der bacillären interstitiellen Nierenentzundung.* Ludwig Letzerich. (*Zeitschr. f. klin. Med.*, XVIII., 5 and 6, p. 528. 1891.)

4.—*Zwei Fälle von primärer infektiöser Nephritis.* R. von Engel. (*Prag. Med. Wochenschr.*, XV., 50. 1890.)

1.—Bluhm analysed 270 cases of Bright's disease; of these 140 were acute, 40 chronic diffuse parenchymatous nephritis, 90 interstitial nephritis. Most of the acute cases were due to acute infectious diseases; in only 4 was cold assigned as the cause, and Bluhm is disposed to reckon these also as infective. Every infectious disease may give rise to Bright's disease, even when it is slight and abortive. The causation of the chronic cases was much more obscure. Infectious diseases probably play a more important part than is generally admitted.

2.—Mannaberg has met with 11 cases of acute nephritis with streptococci in the urine. These streptococci, when injected in relatively small quantities into the blood of dogs and rabbits caused severe nephritis, and in rabbits endocarditis. They did not multiply in the kidneys, but seemed to irritate these organs in their passage through them. He regards these streptococci as the primary cause of the nephritis in his 11 cases; it is a primary nephritis which has a relatively favourable prognosis, as 7 got well, 1 departed uncured, and 3 died after three or four weeks' illness. He believes that cases which have no streptococci in their urine run a very unfavourable course; they become chronic and ultimately end badly.

3.—Letzerich describes a form of acute nephritis occurring in children, which generally runs a favourable course, and is accompanied by marked gastro-intestinal symptoms, swelling of the spleen, considerable fever with often rapid œdema and effusion into the serous cavities, and not unfrequently uræmia. The urine contains abundant straight and curved bacteria, and relatively little albumen or formed elements. The albumen may be so modified as to escape the ordinary tests. He recommends that the urine should be shaken with alcohol which on settling forms a turbid zone at the junction of the fluids. He attributes the renal disease to a specific bacillus (which gives rise to nephritis in rabbits) causing interstitial foci of disease; the nests of bacilli are situated at the junction of the medulla and cortex.

4.—Engel's cases were acute, with high fever, terminating critically after a few days. Neither patient shewed any œdema, but all the other symptoms of acute nephritis were present. No search was made for "the still very dubious micro-organisms."

Sur la néphrite d'origine artérielle.—Lancereaux (*Gaz. med. de Paris*, 1891, Nos 13 and 15—Lancereaux believes that many cases of nephritis are of arterial origin. He divides these into (1) those occurring in elderly persons attended by other signs of arteriosclerosis, (2) in young persons with hereditary predisposition to arteriosclerosis, (3) in young people with aplasia of the vascular system. In each case the dominant condition is a disorder of the nervous system.

Mal de Bright survenant chez deux enfants au cours d'un purpura rheumatoïde —André Moussous (*Revue mens. des malad. de l'enfance*, ix, p. 62, 1891).

Case 1. A boy aged 10, in his second attack of acute rheumatism, had hæmaturia, vomiting, gastric pain, and colic The next day appeared petechiæ on both legs, with hæmatemesis and bloody stools. In spite of his condition his parents removed him from the hospital. He was readmitted three months later with pallor, anasarca, and ascites. The case could not be followed further.

Case 2. A boy aged 13, also in his second attack of acute rheumatism, had colic, vomiting, and diarrhœa The next day petechiæ on both arms and the backs of his hands and melæna. Two days later hæmaturia, œdema, and ecchymoses on the legs Later his urine contained much albumen, with hyaline and granular casts. He died, after four months' illness, of uræmia. The autopsy shewed chronic nephritis in the form of the "great white kidney."

1. *Relations de l'albuminurie avec les psychoses* (*à propos d'un cas de folie du doute coincidant avec une néphrite chronique*). *Un nouveau cas de folie Brightique.*—F. Raymond (*Gaz méd. de Paris*, 1890, Nos 25 and 26)

2. *Attitudes cataleptiques chez un brightique délirant* —Brissaud and Larring (*Gaz hebd*, 1890, Nos 31 and 32).

1 Raymond records the case of a patient who suffered from insanity and chronic nephritis. In the course of several years he observed repeatedly that whenever the renal disease was exacerbated, the patient's mental condition also became worse. In another, the case of a lady, where the *post mortem* examination shewed interstitial nephritis, the last weeks of her life were passed in a state of acute delusional insanity

2. The case related by Brissaud and Larring is quite analogous to Raymond's second case, only the uræmic patient

shewed, some time before her death, cataleptic conditions with bulbar symptoms.

Beitrag zur Kenntniss der Nierenerscheinungen bei acuten Darmaffectionen nebst Bemerkungen über die Bildung der hyaline Cylinder. G. Kobler. *Wiener klin. Wochenschr.* 1890. No. 88.

The results of these investigations into renal affections in intestinal diseases, as well as on the formation of hyaline casts are enumerated as follows:—

1. In cholera nostras as in cholera asiatica, severe renal symptoms may occur.
2. The urine is even in details like that in asiatic cholera.
3. The renal symptoms—especially the albuminuria and cast formation—are the result of the diminished blood current and the consequent nutritive disturbance of the epithelium of the renal tubules.
4. The early period at which hyaline casts occur suggests the conclusion that they are not formed from degenerated epithelium, or as a secretion from this, but by coagulation of an exudation poured out into the tubules, where probably at the beginning of the lesion the epithelium plays the part of a ferment in forming these bodies.

Albuminuria in the apparently healthy. (*Brit. Med. Journal,* 1891, Vol. i., p. 50.)

A medical man sends the account of his own case to the Journal. Aged 36, apparently healthy; albuminuria discovered at age 17. It is absent from the night's urine, or so long as he stays in bed, and from that first passed on rising. Albumen absent when in bed with a febrile disease. Quantity of urine rather increased; sp. gr. 1017 to 1020; acidity deficient; oxalate of lime crystals abundant. The conditions of the urine have not changed during the nineteen years they have been known to exist. Skin active; digestion healthy, sexual functions normal; no history of scarlatina; typical gout at 28, and two years later; none since. General health has improved with advancing age in spite of hard bodily and mental work with "more than an ordinary amount of trouble." He keeps his skin warm and has his bath tepid; avoids constipation; restricts nitrogenous diet; is moderate in the use of alcohol, and takes a liberal allowance of watery drinks.

On cyclical or intermittent albuminuria.—W. P. Herringham (*Brit. Med. Journal*, 1891, Vol. i., p. 219).—This is an account of a case of intermittent albuminuria in a boy of 13; he was thin and pale, with a feeble circulation and a soft pulse; weighed 4 st. 3 lbs.; he had a slight systolic apex murmur, and while in hospital he had a slight attack of acute rheumatism. He was admitted for pain and urgent desire to go to stool after taking food. His urine passed while in bed was examined 34 times and albumen was found on three occasions only. When up it was examined 50 times and it contained albumen distinctly 29 times and doubtfully three times. It was found that cold did not cause albuminuria if the recumbent position was maintained. Sitting up in a chair, and making movements with his arms did not cause albuminuria, as walking about did. The largest amount was always in the morning before dinner, but if he was kept lying down till dinner time the albuminuria did not occur till later. Diet seemed to have no effect on the albumen. For about a month the albumen almost disappeared, without any obvious cause. There were never any casts, but plenty of leucocytes and sometimes oxalates in the urine. The author ascribes the albuminuria to increased pressure in the renal veins. Treatment was of little avail.

Zur Kenntniss der cyklischen Albuminurie im Kindesalter.—O. Heubner. (*Henoch's Festschrift*, 1890, p. 170.)—Heubner has observed three cases of cyclical albuminuria in three children of the same family at or near the age of puberty. From these and other recorded cases he concludes that cyclical albuminuria is a special and peculiar form of chronic excretion of albumen by the kidneys, independent of any renal structural change, and associated with a particular developmental period of the organism (that of growth). The albuminuria is easily excited by change from the horizontal to the erect position and then lasts more or less long, while later in the day it diminishes and disappears towards night. Violent bodily exertion in the horizontal position does not cause albuminuria. It is an expression of general debility but cannot be more accurately explained. Its prognosis is good, provided that the patient takes the necessary care. The treatment should consist in strengthening the body by good nourishment, iron, avoidance of bodily or mental strain. It is well to keep these children in bed for a week or two from time to time; after this the albuminuria often remains absent for some time or altogether. On the other hand it is not advisable to keep them in bed for months as their nutrition would suffer from the long confinement.

The Source and Significance of Albumen in the Urine. W. H. Porter. (*The Post Graduate,* Jan., 1891.)

The author's conclusions are :—

1.—That the albumen found in the urine, excepting that which occurs in the early stages of an acute exudative or diffuse nephritis, is a derived albumen, and not serum albumen.

2.—In the early stage of an acute exudative or diffuse nephritis the albumen comes directly from the blood vessels, due to the inflammatory alteration in their walls, and is of the serum albumen type.

3.—That later in acute exudative or diffuse nephritis, when the vascular walls have partially recovered from the primary inflammatory damage, the albumen becomes more abundant in quantity, but now it is of the derived albumen type, and has been excreted by the damaged epithelial cells lining the uriniferous tubules.

4.—That in all conditions, except the acute exudative or diffuse nephritis, where albumen is found in the urine, it is due to changes in the epithelium, by which it is unable to do the work properly, and excretes or allows a derived form of albumen to pass through into the urine.

5.—That the quantity of albumen contained in the urine is always in direct proportion to the amount of retrograde change in the epithelial cells.

6.—That this retrograde change in the epithelial cells is secondary to an impaired nutritive condition at large, together with an overworked state of the renal cells, without a compensatory nutrition being sustained.

7.—Viewed in this light, if we direct our treatment to improving the general condition of the system and at the same time decrease the amount of work to be accomplished by the kidneys, we shall see many cases of complete recovery which must otherwise remain cases of albuminuria.

THE URINE.

Hæmaturia in East Central Africa. R. F. Castle. (*The Lancet*, 1891, Vol. i., p. 931.)

Hæmaturia is a very common cause of complaint amongst both Natives and Europeans in and near Zanzibar. The condition may be roughly divided into—1, parasitic; and 2, non-parasitic. The parasitic form is caused by bilharzia hæmatobia; it usually attacks the male sex and almost invariably under the age of thirty. All the cases are traceable to the patients drinking the water of two small rivers. As the Europeans boil and filter their water they do not suffer. Buchu and opium seem useful in its treatment.

The non-parasitic form is always associated with high temperature, but no blood cells are found in the urine. (The description is that of paroxysmal hæmoglobinuria. Rep.).

The effects of Asparagus on the Urine.—Prof. Nencki (*Archiv. f. exp. Path.*, Bd. 28, Heft 3 and 4).—Nencki found that the odoriferous body in the urine after eating asparagus is methyl-mercaptan, one of the products of the fermentation of albumen or gelatine, and a normal constituent of intestinal gas He quotes the opinion of Loew, of Munich, that methyl-mercaptan is probably formed during the albuminous disintegration which takes place at the germination of the plant.

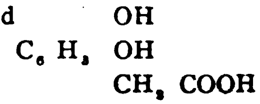
The action of Asparagus on the kidney.—S. Wilks, *The Lancet*, 1891, vol. i., p. 1286; M. B, Cantab., *ibid.* p. 1337; C. Meymott Tidy, *ibid.* p. 1338; F. R. C S., *ibid.* p. 1338; Frederic Vicars, *ibid.* p. 1338.—Dr. Wilks wrote to ask for observations on the alleged diuretic effect of asparagus, and mentioned that Lauder Brunton stated that its odoriferous character was due to decomposition of asparagin, and that succinic acid was one of the products. M.B. Cantab. wrote that after indulging freely in this vegetable there was increased frequency of micturition, though the actual amount of the excretion was considerably diminished, while on three occasions he has been awakened by severe pain in the perineum and glans, with urgent desire to pass water. C. Meymott Tidy says that its effect is "a very marked inhibiting action," not quite uniformly, but in five cases out of six. F.R.C.S. writes that careful examination has shewn him that after asparagus the secretion of urine is reduced by one-third. He also thinks it exerts a calmative influence on the sexual desire. Frederic Vicars says he has had ample experience of the effect of the vegetable in Russian Poland, where enormous quantities are eaten. He says the diuretic action is marked, but the quantity eaten is five or six times as much as would be eaten in England.

Zur Kenntniss der Alkaptonurie.—P. Kraske and F. Baumann (*Münchener med. Wochenschr.*, 1891, No. 1).—The urine examined was that of a man, aged 68, with symptoms of cancer of the prostate. His urine, when freshly passed, was straw or amber coloured, but after standing some hours it gradually turned an olive green, until at the end of twenty-four hours it was a greenish black. At the same time the urine underwent ammoniacal decomposition. When this peculiarity in his urine was pointed out to the patient, he said that it had occurred *since his earliest childhood.* It was sometimes more marked than at others, but he had not noticed that anything in his manner of life influenced it.

Examination of the urine shewed that alkaline copper solutions became reduced in the cold, at first without separation of the cupric oxide; but if larger quantities of copper were added, precipitation took place. On adding a few drops of the urine to ammoniacal silver solution, a precipitate of metallic silver took place. On the other hand, the bismuth test gave a negative result. On addition of ammonia or soda solution, the urine turned greenish brown; if the urine was allowed to stand after being rendered alkaline, one saw that the coloration commenced from the surface. On shaking, the colour changed rapidly to dark brown or black.

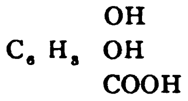
These reactions shewed the presence of pyrocatechin, which one of these authors contends is always present in normal urine. But the first test shewed that the reducing substance was very acid, and could be extracted from the urine by shaking with ether. On evaporating the ether, a brown syrup was left, which dissolved in water and gave all the reactions formerly present in the urine. If this was neutralised with soda or even rendered feebly alkaline, the ether no longer took up any of the reducing substance. The condition of the urine corresponded exactly with what Boedeker described as alkaptonuria; but alkapton could not be obtained in a pure condition, and in course of time it has been identified with various substances. Müller and Ebstein, Fürbringer and others think that it is pyrocatechin, and Boedeker accepted this view. However, W. G. Smith soon shewed that the reducing substance in alkaptonuria behaved as an acid, which he regarded as pyrocatechuic acid. Later, Kirk described the acid as differing from pyrocatechuic acid, and called it urrhodinic acid. Probably this is the acid which Marshall obtained from an alkapton urine, with which he formed good crystallising salts. He called it glycosuric acid. Finally, Kirk in some later investigations obtained a pure acid, uroleucic acid ($C_9 H_{10} O_5$), whose properties and composition he described. Undoubtedly urrhodinic acid, glycosuric acid, and uroleucic acid are identical. Huppert thinks it is to be described as trioxyphenylproprionic acid ($C_6 H_2 (OH)\,{}^3CH_2$-CH_2 COOH). Nothing is known as to its cause.

One of these authors examined the urine carefully, and discovered a new body, not identical with Kirk's uroleucic acid, but which he believes stands in a generic relation to it. He suggests for this body the formula $C_8 H_8 O_4$, but later on it was found to be a dioxyphenylacetic acid



$$C_6H_3 \begin{cases} OH \\ OH \\ CH_2\,COOH \end{cases}$$

which is derived from hydrochinon The hydrochinon-carbonic acid



$$\mathrm{C_6H_3}\begin{matrix}\mathrm{OH}\\ \mathrm{OH}\\ \mathrm{COOH}\end{matrix}$$

bears the name of gentisic acid, this may be called homogentisic acid.

But the most important result of the investigation was the unexpected discovery that this acid is formed from tyrosin. On certain days the patient was given varying amounts of pure tyrosin with his ordinary food, and the excretion of this acid was thereby notably increased. It was also increased by meat diet.

A rapid method for the estimation of Urea in the urine.—C. J. H. Warden. (*The Lancet*, 1891, vol. i., p. 362).—The essential change in this method is the substitution of a Crum's tube of large size, that is of three times the ordinary length and capacity. The tube is graduated on the principle of the receiver in Russell and West's apparatus. The plan described for its use is very simple, but can hardly be adequately described without a figure. The ordinary hypobromite solution is used. It is certainly not less trouble than is required for Gerrard's apparatus, though the apparatus itself is more simple, as it consists only of a straight tube divided into two by a stop-cock and fitted with a grooved stopper at one end.

Permanganate of Potash as a Urinary test.—F. R. Humphreys. (*Brit. Med. Journal*, 1891, vol. i., p. 584).—At a meeting of the Hunterian Society (Feb. 25th) it was stated that urine instantaneously decolorised permanganate of potassium, and this the author considered was due to the presence of a phenol formed in the intestine during the decomposition of albumen. He considered that it was the retention of this substance which gave rise to uræmia. Its normal amount varied from 17 to 34 grains, being highest in the first urine of the morning, in that passed after a meal, and in fine warm weather; while it was reduced by a sick headache it was increased by a fever.

Remarks on a new Test for Albumen and other Proteids.—John A. Macwilliam (*Brit. Med. Journal*, 1891, vol. i., p. 837.—The test recommended is salicyl-sulphonic acid, $C_6 H_3 (OH) (SO_3H) COOH$, formed by the action of sulphuric anhydride on salicylic acid, or by heating salicylic acid with concentrated sulphuric acid. It is soluble in water and alcohol. Albumens are precipitated by it from their solutions, and do not redissolve on heating, while albumoses and peptones redissolve. It is so delicate that it can detect one part of albumen in one hundred thousand parts of fluid ; it gives no precipitate with other substances. He recommends the use of a saturated watery solution of the reagent, of which a drop or two should be added to about twenty minims of urine in a small test tube ; on adding the reagent shake the tube and examine at once, next heat the tube to the boiling point to differentiate albumose and peptones.

Ueber die Ausscheidung des Urobilins in Krankheiten.—Georg Hoppe-Seyler (*Virchow's Arch.*, 1891, Bd. 124, p. 30).—The bile pigment normally leaves the body in the stools and urine as urobilin, but under pathological conditions its amount, especially in the urine, may vary. By employing a method of his own on a number of patients in Quincke's wards, the author has come to the following conclusions :—1. The amount in the urine is very great in stasis of bile in the liver, if diuresis is abundant (rapid absorption of bile pigment from the tissues) ; in polycholia (more abundant formation of urobilin in the intestine) ; in stagnation of the contents of the large intestine (increased absorption of urobilin), not of the small intestine ; in hæmorrhages into internal organs, and in many anæmias (increased formation of bile pigment from destroyed blood pigment, increased formation of urobilin in the intestine, changes of the blood pigment extravasated in the tissues into urobilin). In pernicious anæmia, leukæmia, and pseudoleukæmia the quantity is normal, while it is *diminished* in depression of the liver functions from cachexia, inanition, bile stasis without access to the intestine and scanty diuresis ; and finally for some time after the course of an attack of jaundice.

Studien über die Pilztödtentende Wirkung des Frischen Harns.—Erich Richter (*Arch f. Hyg*, 1891, xii, 1, p. 61).—The author concludes that fresh urine has an energetically fatal effect on the splenic fever bacillus and the comma bacillus of cholera, but less on the typhoid bacillus. This action is due chiefly to the acid phosphate of soda present, and varies according to the concentration of the urine, while it almost entirely disappears if the urine is neutralised, or boiled for an hour (which converts the acid phosphate into neutral phosphate); but there are other antiseptic substances present, the action of which is seen in urine concentrated to half its volume, although acid phosphate is absent. What it is, whether the chlorides or concentrated neutral phosphates, has not been determined; the carbonic acid present appears to have no influence on these micro-organisms.

Clinical Remarks on Sarcinæ in the Urine for fifteen years without accidents.—James Finlayson (*Brit. Med. Jour.*, 1891, vol. i., p. 1371).—A gentleman, aged 57, complained of some trivial ailment. Urine turbid when passed; no albumen or sugar. Under microscope numerous sarcinæ and a few triple phosphates. Fifteen years later sarcinæ still present. No bladder trouble. History, that when a boy he suffered from some urinary irritation with frequent micturition, for which a catheter was passed, and he was sounded for stone. The symptoms remained for a year or two and then passed away.

In a second case, the patient had sarcinæ in the urine and a history of catheterism after a confinement. Duration not stated. Cause attributed to introduction of instruments into the bladder (*conf.* Falkenheim, *Arch. f. exp. Path.*, 1885, Bd. 19). The author remarks on the harmlessness of these organisms as bladder parasites.

Ueber schwarzer Urin und schwarzer Ascites.—H. Senator (*Charité Annalen* xv.)—Senator believes that there are grouped under the name "melanin" several different pigments, which only have the black colour in common. He has seen a case in which the dark brownish red urine turning darker on exposure to the air, gave the reaction with chromate of potash and sulphuric acid, but contained much indican, so that the coloration must be attributed to that. The autopsy shewed the absence of melano-sarcoma. Moreover bile derivatives may simulate the presence of melanin in the urine. One ought to diagnose absolutely the existence of a melanotic tumour on the sole ground of the passage of urine which gives the chromic acid reaction, although all melanotic tumours occasion the passage of melanin in the urine. It is noteworthy also that urine may be passed by patients with melanotic growths, which contains melanin, but does not give the chromic acid reaction. An advance in the differentiation of melanogen from indican has been made by the employment of bromine water or ferric chloride, neither of which act on indican. In a case of extensive melanosis Senator observed, besides melanuria, the effusion of a dark brown ascitic fluid, from which after standing several days a black deposit fell. The pigment behaved with bromine water like that in the urine. The pigment in the urine was chiefly melanogen, but in the ascitic fluid it was melanin. In continuation of the data supplied by Miura that after injection of hippomelanin into the abdominal cavity of rabbits, their urine contained melanogen in two cases out of four, Senator injected melanin from human melanotic tumours into the abdominal cavities of four rabbits, and found that the urine passed subsequently contained much indican, but no melanogen, and did not become darker with bromine water.

Ueber das Vorkommen von Hæmatoporphyrin im Harn.—E. Salkowski. (*Centralblatt f. d. med. Wissenschaften*, 1891, No. 8.)—In February, April, and the end of June, 1890, Jastrowitz sent S. the urines of three female patients which had attracted attention by their dark red colour. Careful examination shewed that all contained a great amount of hæmatoporphyrin, which at the time of his investigation had not been demonstrated with certainty to occur in the urine. It was easy to isolate it as hæmatoporphyrin-calcium mixed with calcium phosphate, and to identify it by its characteristic absorption bands. Recently, Ranking and Pardington have described the presence of hæmatoporphyrin in the urine, and it is very probably identical with the red urinary pigment described by Stokvis a short time ago. These cases also were females. Of his three cases one died, as did Stokvis's case and one of the English cases, so that out of six cases three were fatal. The probable cause was the use of sulphonal, which was employed in all the three cases of Jastrowitz and in that of Stokvis; in the former it had produced quite abnormal effects. These abnormal effects are due to a personal idiosyncracy to sulphonal.

Hæmatoporphyrin in Urine.—S. M. Copeman (*Brit. Med. Jour*, 1891, vol. i., p. 175).—At a meeting of the Pathological Society of London, January 20th, two specimens of urine were shewn and reference made to two other cases recently published in the *B. M. J.* All four patients were highly neurotic women of middle age, free from organic disease, but complaining of habitual constipation, sleeplessness, and abdominal pain, with great prostration and occasional apparent inability to move the limbs, accompanied by the excretion of small quantities of dark purple red urine containing neither albumen, sugar, bile, nor hæmoglobin. Finally, three out of the four patients died collapsed and comatose within a week of the onset of the severe symptoms. No proteids were present in the urine. The pigment differed slightly from hæmatoporphyrin in having undergone a slightly less degree of metabolism. It was suggested that the condition was allied to pernicious anæmia, and that the patients had suffered from an excessive destruction of blood corpuscles in the liver in consequence of the absorption of some poison from the intestine.

Beiträge zur Methodik der Harnuntersuchung.—A. Jolles (*Wiener med. Presse*, 1890, Nos. 21 and 22)—To demonstrate the presence of small quantities of albumen in urine rendered turbid by bacteria and not cleared by simple filtration, Jolles recommends that the urine should be shaken with kieselguhr (a siliceous earth used in making dynamite), and then filtered. In the case of urine containing much muco-pus where the albumen adheres to the precipitate on the filter, this should be washed with hot liquor potassæ, and the filtrate acidulated with acetic acid and tested with ferrocyanide of potassium. He further recommends as a new test for albumen to treat the urine with an equal volume of hydrochloric acid, and to run on this with a pipette two or three drops of chloride of calcium solution. In the presence of albumen a cloudy layer is formed; the test will detect 0·01 per cent. of albumen. For the detection of bile pigments he recommends Rosenbach's test modified by gently warming the filter or funnel, or Huppert's (precipitation with 1 per cent. milk of lime, extraction of the precipitate with alcohol acidulated with hydrochloric acid, and heating of the alcoholic solution, which turns green). He suggests a new method by utilising the iodine value of the urine—that is, the amount of iodine absorbed by 100 grammes of dry urinary matter. To the substances which absorb iodine belong the pigments and the aromatic putrefactive bodies (phenol, oxyuric acid), and especially uric acid. In urine free from pathological products but containing much uric acid, the iodine value is at most 7·3 to 7.8; in the presence of bile pigment it may rise to 17·4.

REVIEWS.

◆

REPORT ON THE INFLUENZA EPIDEMIC OF 1889-90.*

This Report, with an Introduction by Dr. George Buchanan, is, in the words of the latter, "a worthy addition to the excellent monographs on Influenza that have been contributed to English medical literature," though dealing only with the disease as it appeared last year, when it assumed, on the whole, a milder type and was far less fatal than it has been during the present season. The Report says that "as this epidemic of Influenza was the first that had visited this country since the establishment of a central health authority, the occasion was deemed to call for a somewhat extended official inquiry on behalf of the Local Government Board into the behaviour and causes of this obscure but interesting disease, in the hope of throwing light upon the various unsettled problems connected with its etiology. To this end, among other means, a circular was sent out to the Medical Officer of Health of each sanitary district (rural, urban, or port) in England and Wales (1,777 in all), asking for replies to a printed form of queries. Communications were also entered into with other Government Departments and with railway companies and other public or quasi-public bodies, from whom much valuable information was obtained. Local enquiries into several early outbreaks of Influenza or similar disease in village communities were made by Dr. Bruce Low; and the circumstances of outbreaks in several institutions were inquired into by myself."

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* Report on the Influenza Epidemic of 1889-90. By Dr. Parsons. With an Introduction by the Medical Officer of the Local Government Board. London: Printed for Her Majesty's Stationery Office by Eyre and Spottiswoode. 1891.

It is generally known that the last severe outbreak of influenza occurred in the years 1847-48; and, although there were slight increases of mortality from this cause in 1851 and 1855, on the whole the deaths from it had steadily decreased until within the last twenty years they had become quite insignificant. Nevertheless it was not unknown elsewhere, as there was an epidemic in Philadelphia in 1870, and one in Fiji in 1876-77. But there is reason to believe that the disease known as epidemic influenza is quite different from that which is certified as influenza in non-epidemic years. These reasons are that during the epidemic the deaths are chiefly those of people in the middle period of life, while in ordinary years the deaths certified as influenza are of very young or very old persons for the most part; and in the Registrar-General's reports at one time causes of death described as "catarrhal fever," "epidemic catarrh," "feverish catarrh," and even in some cases "coryza" in adults, were classed under the heading of "influenza."

The following facts bearing on the conditions precedent to the epidemic are mentioned by Dr. Parsons. In 1885 a disease called locally "fog fever," owing to the prevalence at that time of severe fogs, prevailed over a large part of Australia, and has been thought to be similar to epidemic influenza. Influenza of a severe type was prevalent in Greenland in the summer of 1889. A complaint resembling influenza prevailed in Athabasea in the north west of British North America in May, 1889. Epidemic influenza was present in Bokhara in May, 1889. The disease called dengue, which in many respects closely resembles influenza, was very prevalent in Constantinople, Smyrna, Jaffa, and other places on the east coast of the Mediterranean. A disease among horses called "influenza" prevailed in several places in England and on the Continent prior to the outbreak of influenza. The outbreak in Bokhara, which appears to have been very severe, the Europeans suffering very greatly, seems to have been the immediate cause of the spread of the disease in Russia, whither the invalid Russian railway officials and soldiers hurried for change of air and nursing, as soon as they were able to travel. They would seem to have taken the epidemic with them, as it travelled westward along the Central Asian railway, but according to another account the first official record of its existence in Russia was at Tomsk, in Siberia, on October 27th.

In Boston, U.S A., there seems reason to believe that the infection was conveyed in a letter from Berlin to a young woman who was the first person taken ill with the disease. It is interesting to note how world wide has been the spread of the epidemic, from the Falkland Islands in the Southern Hemisphere to Greenland in the north, in Sierra Leone and the Cape, India, China, Japan, Australia, Fiji, North and South America.

With reference to the alleged identity of dengue and influenza, Dr. Limarkis, who lives in Constantinople, and has had ample opportunities of seeing both diseases, gives their differential symptoms in the following tabular form :—

	DENGUE.	INFLUENZA.
Localisation	Hot countries.	All climates.
Duration of an epidemic	Three to five months.	About one and a half months.
Spread	Slowly from small foci.	Rapidly attacking large districts simultaneously.
Commencement	Sudden.	Almost always sudden.
Fever	Very high.	Not always very high.
Nervous system	Prostration. pain in the head and limbs.	The same.
Larynx and trachea ...	Seldom attacked.	Always attacked.
Dyspnœa	Never.	Common.
Gastric symptoms ..	Always ; violent and persistent.	May be absent.
Eruption	Always ; beginning in the face, descending, erythematous, ending in desquamation.	Rare, irregular.
Headache	Sensation of external pressure ; iron hoop.	Violent, internal, often neuralgic pain.
Complications	Rare ; of heart, liver. and kidneys.	Common ; bronchioles and lungs.
Convalescence	Very slow.	Usually rapid.
Prognosis	Always favourable.	Often occurs in malignant form.
Attacking animals ...	Dogs, cats.	Horses.

Both diseases occurred shortly after one another in Constantinople and Egypt.

Respecting the incubation period of influenza a good many data have been accumulated, from which it would appear to be from sixteen hours to seven days, and is most frequently two or three days. Infection has been proved to continue in the stage of convalescence; but Dr. Parsons has not been able to fix the limit of its duration. It has also been suggested that patients may communicate infection during the period of incubation.

Susceptibility to the disease, though widespread, is not universal; and this or the reverse appears to run in families. Fatigue and exposure favour the development of the disease. All ages seem liable to the disease, and the view that children are not so liable to contract it as adults is negatived by the large percentage affected in some schools and training ships. The sexes were equally affected where the circumstances were otherwise equal—*e.g.*, the male and female clerks at the Post Office. One attack of influenza does not protect against another; in the recent epidemic there were many instances of two or more attacks.

The chief complications and sequelæ are stated to be pneumonia, bronchitis, and pleurisy; more rarely meningitis, suppurative otitis, and phlebitis. No mention is made of nephritis, acute mania, acute hysteria, diabetes, suppurative ophthalmitis, ocular paralysis, and other phenomena which were observed and recorded in the journals last year. Dr. Parsons prints brief accounts of the various micro-organisms which have been described by different observers, but concludes that the specific microbe has not yet been discovered. He believes that the microbe theory is the most tenable, and in this view he has the support of educated medical opinion.

The evidence in favour of the communicability of the disease occupies many pages, and is of great interest. There can be no reasonable doubt, after weighing all the facts, that the disease is chiefly conveyed by human intercourse. With reference to the alleged case of the outbreak on Lord Howe's squadron after it had been nearly a month at sea, Dr. Parsons quotes the following from Dr. Gregory (see "Life of Sir Robert Christison"):—"Our fleet was watching the Dutch ships in the Texel. The whole fleet was in excellent health and spirits, when a cutter arrived from the Admiralty, and the signal was given for an officer from each ship. An officer was accordingly sent with a boat's crew from every vessel, and returned with orders, ***carrying with them however the Influenza***," so that the means of communication were here quite evident. There is great want of definiteness in other often quoted cases as to the possibility of communication with other vessels or even with the shore. Those classes of men who are for long periods debarred from communication with the rest of the world—viz, deep sea fisher-men and keepers of lighthouses—appear to have been exempt from the disease. That this was not due to any special protection in their conditions of life was shewn by the spread of the disease when it was introduced. Dr. Parsons thinks that the argument against the theory of contagion based on the apparent outbreak of an epidemic without any source of infection from a previous case being discoverable may be disposed of by the following facts:—1. The disease occurs frequently in a mild and unrecognisable form, yet persons affected in this mild way may spread the disease. 2. It is probable that the disease is communicable during the period of incubation. 3. Infection may be conveyed by letters or clothing. 4. The disease may be contracted by and from domestic animals. 5. The disease does not occur under circumstances—*e.g.*, on board deep sea fishing smacks and lightships—in which infection from a previous case is physically impossible.

He does not think the epidemic in man had anything to do with the epizootic known as "pink eye" among horses, as the latter prevailed where there had been no influenza. Persons having to do with horses were not specially or early affected; and in many places where the influenza epidemic prevailed, the absence of any such disease in horses was affirmed.

It has been very difficult to get at any figures which convey a correct idea of the prevalence of the disease among the population generally. Mr. A. H. Smee, Medical Officer to the Gresham Life Assurance Company, an office doing a large business on the Continent as well as in this country, believes that over eight per cent. of the total population of Europe were attacked. He estimates that the insurance and friendly societies in England paid not far short of £1,000,000 on account of the increased mortality and sickness caused by it, and that the loss of wages and disorganisation of business cannot amount to much less than another million pounds.

The appendices to the report contain a great deal of interesting information in a detailed form, and we feel sure that any of our readers who are specially interested in the subject will do well to procure the volume, although we have endeavoured, as far as is possible in a short space to extract its most important facts and conclusions.

MY DOCTORS.*

THIS little book, intended to wile away the tedium of a railway journey, scarcely deserves or demands any notice from us, did it not illustrate the extraordinary ignorance of the public and even of those who, like the author, pretend to know, concerning the organisation of the profession. The patient is supposed to be suffering from his "nerves," so he is recommended by a young medical friend to consult a "big wig" in Harley Street, whose "dresser" the said medical friend has been. The "big wig" is a good "all round man," though apparently a surgeon. In the next place he consults a "specialist," who is a gentleman living in Mayfair, and who is not at all, so far as we can gather, a specialist in nervous diseases, but a fashionable ladies' doctor. Then there follow the lady doctor, the homæopath, the country doctor, and finally the ideal man. The chaff of the profession is very good-natured, and mingled with much kindly recognition of our merits; but it seems to us that the writer quite fails to understand that we study diseases, and that we know something about them; that there is a science of medicine, and that practice is not simple *savoir faire* and coloured water. It is quite true that "in the majority of cases it is not the greatest medical or the greatest surgical aid that is wanted;" but it is not, as a rule, such cases that find their way to the consulting-rooms of those who are able to supply the highest medical or surgical art, so that for those patients the saying becomes no longer true. They do require the highest medical or surgical skill, even if it is only to assure them, after a thorough examination, that they have nothing or only some simple thing the matter with them. It may be assumed that whatever the affection may have been, it has grown to very important proportions in the mind of the patient, and if he consults a highly-trained and well-paid consultant, he has a right to expect, and we trust always obtains, the best advice that the consultant can give him. No one knows better than a consultant how foolish it is of people to come to consultants without asking the advice of their own family attendant No doubt a few of these resent the suggestion of further advice, so that patients are disposed to go off without saying anything for fear of giving offence. But this state of things is incident to a transition period. The "all round" consultant is happily getting to be a thing of the past, and people are beginning to see that their title to be consulted must rest upon not their appointments or the letters after their names, but on study of particular branches of practice in which they acquire knowledge which gives their opinions and advice a special value. There are many diseases which are only sufficiently common in a great centre to be studied properly, and which occur so rarely in ordinary practice that those so engaged cannot possibly learn much about them, or acquire skill in their treatment, on account of the limited experience which comes in their way. On the other hand, in dealing with common ailments the well-trained general practitioner is equal to anybody. The difference is solely one of opportunity for gaining experience; where these are equal there is on the whole equality of knowledge and skill, allowing of course for individual differences which do not distinguish classes but men.

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* My Doctors. By a Patient. London: Skeffington and Son.

Miscellany.

Teacher: "Late again, Johnny! Remember, Johnny, it is the early bird that catches the worm."

Johnny, solemnly: "I already got 'em."—*Ex.*

Doctor: "I will leave you this medicine to take after each meal."

Mike: "And will yez be koind enough to lave the meal, too, doctor?"—*Tid-Bits*

She: "Oh, my tooth aches just dreadfully! I don't see why we cannot be born without teeth.

He: "I think, my dear, that if you will look up some authority on that point you will find that most of us are."—*Omaha World.*

Drug Clerk: "Woman in front, with eyes rolling and hair flying, wants to buy some poison."

Druggist: "Poor thing! I suppose her house is so full of rats she is almost crazy. Give her a pound."—*Philadelphia Record.*

A HEAVY DOSE.—This is the order which a little girl brought into a Lewiston druggist's store the other day. It was written on a dirty piece of note paper, as follows:—"Mister druggist: Please send ipecac enough to throw up a four-year-old girl."

New Books, etc., Received.

Handbook of Diseases of the Ear, for the use of Students and Practitioners. By URBAN PRITCHARD M.D. Edin., F.R.C.S. Second Edition. London: H. K. Lewis.

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ORIGINAL COMMUNICATIONS.

NOTES ON SOME OF THE COMPLICATIONS AND SEQUELÆ OF ENTERIC FEVER.*

BY HENRY W. JACOB, M.A., M.D., UNIV. DUBL.

IN the latter half of the year 1889 enteric fever was very prevalent in Dublin. During that period I had the opportunity of observing fifty cases of the disease in the Adelaide Hospital, Dublin; and as several presented features of interest, I have thought that it might be of use to record some facts about them in the following paper.

The mortality in the hospital from enteric fever during this period was 14 per cent. Of these deaths one was due to perforation, which occurred in the third week, the patient being a young man of remarkably good physique, but one who had not been of temperate habits. No death resulted from hæmorrhage. Of the cases admitted to hospital a considerable number appeared at first to be of a rather mild type, but more than half of the fatal cases occurred among these. Among them may be included the foregoing case of perforation, which promised to be a mild case, and, although treated with regard to diet as carefully as any of the more anxious ones, suddenly became fatal in the third week; one case which developed psoas abscess during the course of the enteric fever, and eventually died from prolonged suppuration; one case in which the patient, after apparently becoming convalescent from the attack of enteric fever, presented symptoms of pulmonary phthisis and rapidly succumbed to that disease; and another case, of an apparently mild type, in which the patient suddenly grew worse and died probably from simple heart failure, although stimulants had been exhibited. In this last case no lesions beyond the usual ulceration of the small intestine could be discovered at the *post mortem* examination.

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* Read before the University Biological Association, Dublin.

It is interesting to note that in one case a very well-marked relapse occurred after the patient had left the hospital. This patient had a well-marked but not very severe attack of enteric fever, during the course of which he developed erythema nodosum on both legs and arms. The patient remained in hospital for three weeks after his temperature had become normal, and was then sent home to the country apparently quite well. Within a week he was readmitted to the hospital with a typical second attack of enteric fever, which later on was complicated by œdema of one of the lower extremities, apparently due to phlebitis of the femoral and external iliac vein. This patient made an excellent recovery; but his temperature in the second attack was higher than during the primary one, and the general symptoms were more severe.

Three cases suffered from epidemic influenza, which they contracted during their convalescence. They all did well, and do not appear to have been injured by the complication.

Not more than three-quarters of the total number of cases shewed any well-marked eruption coming out in crops, and in not a few undoubted cases of enteric fever not a single spot was discovered during the attack. Several cases shewed, in addition to the true eruption of enteric fever, diffuse erythematous rashes at varying periods of the disease.

Diarrhœa was absent in a large number of cases, not more than half of the total number presenting this symptom in any marked degree. In not a few cases very obstinate constipation was present throughout the attack, necessitating the use of enemata; and this occurred even with a typical typhoid chart and skin eruption; moreover, of the cases characterised by constipation some had very severe attacks of the disease.

The routine treatment adopted, but which occasionally varied within narrow limits, was to give the patient *two pints* of milk in twenty-four hours, with which, later in the course of the disease, *if diarrhœa were absent*, one pint of beef tea might be given. When the temperature had remained normal for a week the administration of solid food was commenced, cornflour being the first change from an exclusively milk diet. Stimulants and drugs were not given unless specially called for. The drug which was found most useful in cases of hyperpyrexia was antipyrin, which gave no bad results. The drugs most effectual in checking intestinal hæmorrhage were opium and turpentine given in combination, 20 minims of Battley's solution of opium being added to an emulsion containing one drachm of ol. terebinthinæ and given every four hours until the desired effect was produced. No bad results followed the use of this mixture. Other measures were resorted to but not with the same success. It is important to note in this connection that no case died from hæmorrhage.

Having touched on some of the general facts connected with the cases under notice I shall pass to the consideration of the chief complications which arose. Before leaving this connection I wish to call attention to two cases in which the communicability of the disease was well shewn. One case was that of a young woman who not long after her confinement undertook the nursing of her sister, who had enteric fever, and contracted the disease; the other was the case of a hospital nurse who was on special duty with a typhoid patient and who contracted the disease herself. This case was remarkable from the fact that it was the second attack of enteric fever which this nurse has had, and that her former attack was contracted in precisely the same manner nine months previously. In this instance the second attack was less severe than the primary one.

These facts confirm the views generally held, that enteric fever may be contracted by those in attendance on the sick (as other causes were excluded in both the cases mentioned) and that one attack does not confer immunity. Five members of one family were in the hospital at the same time all suffering from enteric fever, but in this case a common cause was shewn to account for all the attacks.

The first complication to which I desire to draw attention is Acute Nephritis. I cannot find that this complication is recorded as occurring in the course of typhoid fever; it is at all events uncommon. The patient, a young man aged 20, had for some weeks before admission been feeling "out of sorts." About four or five days before admission he was seized with frontal headache and lost his appetite. At the same time he felt much occasion to go to stool, he passed much wind, and after taking a black draught the bowels became very loose. He now had to go to the country on business and there he was exposed to cold and greatly fatigued. He became so ill that he returned to Dublin and was admitted to the Adelaide Hospital. On admission patient besides febrile symptoms had a slightly full abdomen, but the spleen could not be felt. The pupils were markedly dilated, the urine highly albuminous, the pulse of low tension and rather frequent.

On examination, the urine was found to contain much blood, being highly albuminous, smoky in colour, and containing blood casts. Three grains of calomel were given, and the bowels were freely moved, the motions being liquid, and yellow in colour. The tongue, which at first was very red, in a few days became thickly furred on the dorsum, and presented transverse cracks. The evening temperature on one occasion reached 104°, and presented a distinct morning fall and evening rise. Rose-coloured lenticular spots came out in successive crops. The spleen was not distinctly felt at any time during his illness, but the area of splenic dulness was increased. The case ran the usual course of enteric fever, the hæmaturia continuing for a fortnight and albuminuria until the end of a month. The temperature became normal on the twenty-third day. The patient made an excellent recovery. The treatment consisted principally in placing the patient on exclusively milk diet for the earlier part of his illness, leeching over the kidneys on one occasion, and the internal administration of digitalis and ergot. The case was unquestionably one of enteric fever complicated by acute nephritis. The condition of the kidneys was probably induced by exposure after the invasion of the fever. The presence of this complication led to a very guarded prognosis; but, curiously enough, the disease ran a normal course, and the patient had not a trace of nephritis when he left the hospital. No œdema of the extremities was present at any time during the illness.

Murchison, in his classical work on "The Continued Fevers," states that the kidneys are occasionally found much congested after death from enteric fever, and that blood is sometimes found in the urine; but I cannot help thinking that if he had been familiar with cases of long-continued and excessive hæmaturia in enteric fever, he would have given them more than a passing reference. I conclude, therefore, that the present case was one of exceptional interest, both from its rarity and from the surprisingly good result which ensued in the presence of such a serious complication.

Pneumonia complicated two cases, and both of these ended fatally; but in each case the fever was of an exceedingly severe type apart from the complication.

In three cases serious abscesses occurred before the patients had recovered from the disease. The first was a case of ischiorectal abscess, which caused much pain and inconvenience to the patient, but from which, under surgical treatment, he rapidly recovered.

The second was one in which towards the end of the third week, in a particularly severe attack of enteric fever in a child aged 6, a large parotid abscess was developed. Incision and antiseptic treatment brought about healing with scarcely a trace of disfigurement, and the patient made a good recovery.

Murchison has met with six cases of parotid abscess occurring during enteric fever, five of which died; and Trousseau states that he has hardly ever known such cases recover.

The third case of abscess, following typhoid fever, was of a much graver type even than these, and ended fatally. The patient had become almost convalescent from his attack of enteric fever, when his temperature became again raised above normal and began to assume a hectic character. The patient complaining of stiffness in the left thigh, a close inspection was made, and revealed the existence of a psoas abscess. No tenderness existed along the vertebræ, and the patient had never suffered from pain in the back. He was a healthy man previous to the attack of typhoid fever, and was on active duty as an Inspector of Constabulary until shortly before admission. The abscess was laid open in the left lumbar region, and free drainage instituted. Although the cavity was treated with the utmost precaution to prevent infection of the discharges, the latter continued very profuse, and the patient died after several weeks Towards the end the patient had some pain in the lower dorsal region, but no carious bone was discharged at any time. A *post mortem* examination could not be obtained.

The next case which I shall mention is one which was extremely perplexing, and, at the same time, alarming, both from the sensational variations of temperature, and from the prostrated condition to which the patient was reduced. William B., aged 17, admitted September 4th, 1889. The patient was suffering from enteric fever, of about twelve days' duration The case was fairly typical and rather severe, but towards the middle of the third week the temperature began to come down, and all seemed to be going on satisfactorily. The evening temperature had once reached 104·2°, but by the 19th day it had fallen to 100·4°. During the 20th day, however, the patient had a severe and prolonged rigor, accompanied by acute pain in the occipital region. The temperature rose almost at once to 105·4°, but soon afterwards the patient perspired freely, and the temperature fell to 99·2°. The patient had a fairly comfortable night, and remained in his usual condition until the evening of the succeeding day, when he had a precisely similar rigor, and his temperature rose rapidly to 106·2°. This attack was succeeded by a sweating stage as before, and by next morning the temperature had fallen to 98·8°. The next evening brought about a precisely similar train of events, rigor, pyrexia, sweating stage, and fall of temperature. On this occasion, however, the temperature reached 107° in the evening, and within twelve hours it fell from 107° to 97°. From this date it continued to rise almost every afternoon for three weeks, falling again to normal or sub-normal within about twelve hours of each sudden elevation. On one occasion it was 105·4° at 6.30 p.m., and by 2.30 a.m. it had fallen to 95°. Under the influence of quinine the exacerbations became less and less pronounced, until by the end of the sixth week from admission the temperature began to assume a normal course. During the patient's first week in hospital, when the enteric fever was entering on its third week, the spleen was distinctly enlarged, but after the third week no enlargement could be detected, even during that period of the illness when daily rigors were occurring.

By the end of the sixth week the patient was reduced to a miserably low and emaciated condition, each recurring rigor apparently leaving him more and more prostrate than the last. But with the disappearance of high temperature there seemed at last a chance of the case ending favourably. Fresh troubles, however, awaited the patient. Scarcely had the cessation of these rigors begun to raise our hopes, when the patient on the forty-second day of his illness was seized with sudden and severe pain in the abdomen, followed by the passage of a liquid motion containing blood clots and mucus This condition instead of ceasing became intensified, and during the next seven days the patient continued to pass as frequently as five or six times daily dysenteric stools containing blood clots and much mucus, the boy suffering great pain and tenesmus nearly every time. The administration of opium in half-grain doses every third hour seemed to exercise very little effect on the character or frequency of the motions; one dose of ipecacuanha, 20 grains, which was immediately vomited, and a flax seed enema did not appear to be of much benefit. These measures proving inefficient he was given *one grain of opium* combined with *bismuth and carbolic acid* every third hour, with enemata of starch and opium. Under this treatment the symptoms became less urgent, and within two or three days blood and mucus disappeared. The patient was soon able to take nourishing food, and although his life had been despaired of, he was able on the fifty-seventh day of his illness to sit up by the fire. He eventually left the hospital quite well.

It is almost impossible to say with any scientific accuracy what was the precise nature of the complications in this case. The dysenteric symptoms might be supposed to point to extension of the ulceration to the large intestine; but this would hardly account for the highly remarkable variations of temperature which preceded them. The paroxysms of fever presented a striking resemblance in some respects to those of intermittent fever; for although the clinical history was not exactly that of ague with regard to the duration of the paroxysms, still there undoubtedly was a chilly stage, a hot stage, and a sweating stage. The great point which negatived ague was that, although during the primary enteric attack the spleen was enlarged, at no period after the third week could any enlargement be detected. Quinine treatment, however, appeared to be the only thing that did the patient any good during the period of ague-like condition. There was no *à priori* reason for supposing that the disease actually was ague, for the patient had never been abroad and did not reside in an aguish district; the ward in which he was placed was dry and airy. It is just possible that the condition may have been of a pyæmic nature, originating during the sloughing of the intestinal ulcers; but if this were so, one could hardly expect such an excellent recovery. Tuberculosis, though suspected at the time, has also to be excluded. The only statement that one can make with any degree of probability is that ulceration occurred at a late stage in the larger intestine; but what relation, if any, the abnormal intermittent pyrexia bore to this ulceration and to the primary enteric fever must remain a matter of speculation.

I have now to describe to you a case in which tuberculosis did supervene on enteric fever. Sarah L., aged 6, was admitted October 14th, 1889. Two other members of her family were suffering from enteric fever at the time of her admission. The history and course of the patient's illness was that of a simple attack of enteric fever, with this exception, that no characteristic skin eruption was developed. About the end of the fourth week the patient's temperature became normal, and although she had been seriously ill, convalescence appeared to be well established. It is important to note that although the lungs were carefully examined on admission, no signs of disease were discovered in them. Just as convalescence seemed established, the child got an attack of chicken-pox, without much constitutional disturbance. The eruption faded gradually. the tongue became quite clean, and the temperature normal.

The case went on very well for a fortnight, during which time the temperature remained normal, until one evening it rose to 103·8° ; the next evening it was 105°, and the child again became extremely ill At this time sibilant râles were noticed for the first time over both apices; the tongue became furred again and the spleen was enlarged. Tubular breathing was soon after heard over the right apex and the percussion note was dull in this region. It became evident that if this were a relapse other mischief was present as well. Cough now became troublesome for the first time, the abdomen became full, and after some weeks fluid could be detected in it. Emaciation continued to increase, the temperature remained more or less elevated, and in the sixteenth week of her illness the patient died.

At the *post mortem* examination a good deal of yellowish lymph was found covering the surface of the intestines, and a quantity of yellowish fluid was present in the peritoneal cavity. Peyer's patches in the lower end of the ileum were very conspicuous and darkly stained, apparently by old inflammation, but only in the neighbourhood of the cæcum and in the cæcum itself were ulcers found. These ulcers were tubercular in character. The mesenteric glands were much enlarged and cheesy, while the other abdominal organs appeared healthy. There was a large cavity in the upper lobe of the right lung, the anterior wall being adherent to the tissues behind the sternum, so that on removing the latter the cavity was torn open. Both lungs shewed extensive deposit of tubercle, the right lung being the most diseased and much consolidated. The heart was healthy, and the pleural sac largely obliterated.

It is of course open to question whether this was a case of enteric fever at all, but it seems to me most probable that it was. The fact that enteric fever was contracted by two others of the same family at the same time lends colour to this theory, and the evidence of past inflammation in Peyer's patches tends to confirm the diagnosis, which was held without question for the first six weeks of the patient's illness. It is possible that the tubercular change in the patches near the cæcum may have taken place in the site of ulcers produced by enteric fever. The unmistakeable convalescence of the patient after the first attack is also in favour of enteric fever, though too much stress must not be laid on this point.

On the whole it seems to me that the most rational view of the case is somewhat as follows:—That the patient contracted enteric fever, that during convalescence she developed pulmonary phthisis, and that from swallowing her own sputum tubercular infection of the old typhoid ulcers took place, accompanied later by tubercular peritonitis.

A case of great rarity was brought to the hospital in December. The patient was a child who, after an attack of enteric fever, developed noma or cancrum oris. Murchison states that he has only once met with this disease in typhoid patients, and that Trousseau has seen about one case in 600 patients, that it always occurs in children, and is invariably fatal.

That exceptions to the latter statement may occur is shewn by the fact that a patient recently admitted to the Adelaide Hospital had unmistakeable signs of old cancrum oris, which disease arose in childhood during enteric fever. The case previously mentioned, however, did die. The child had evidently been much neglected, and on admission the greater part of the left cheek was quite gone, a gap being left, the edges of which were covered with a foul greenish and intensely fœtid slough, the gap extending from close to the angle of the lips to the posterior border of the ascending ramus, and from the lower border of the inferior maxilla to within half an inch of the zygomatic arch. Through the gap could be seen the gums with the teeth, some of which were loosened. It was not considered advisable, owing to the far advanced state of the case on admission, to carry out any radical measures for the entire removal of the disease, so attention was directed to keeping the ulcerated surface as clean as possible by removal of sloughs, &c, and to supporting the patient with stimulants and nourishing food. Some temporary improvement did actually take place after this, but the child died within a fortnight after admission. The history of enteric fever was well established, but the noma had evidently not appeared until the third or fourth week.

A case was admitted in which right hemiplegia, attended with some loss of sensation and well-marked aphasia, had come on quite suddenly in the course of an attack of enteric fever. The patient when brought to hospital was actually suffering from enteric fever, the duration of which was somewhat uncertain (probably third or fourth week) On admission there was complete paralysis of the right arm, and almost complete paralysis of the right leg. The right side of the face was also paralysed, and the patient was completely aphasic. There was marked ankle clonus, greater on the right side than the left. The patellar reflex was normal, and cutaneous reflexes entirely absent. There was no difficulty in swallowing, and the patient was able to take nourishment. At first there was no rigidity present, but after two days from admission the patient had a rigor accompanied by headache and re-elevation of temperature. Next day there was marked rigidity in the right arm.

The aphasia was evidently neither dependent on paralysis of the vocal organs nor on simple loss of the power of co-ordination of speech, but belonged to the class of cases included under the name amnesia. Words evidently conveyed no meaning to her. For instance, she used the name of her physician quite irrelevantly, and would pronounce it when shewn a watch or other object; she could not understand a written sentence, and would mutter individual letters from it in a helpless manner. She remained in much the same condition for over a fortnight, after which time her words began to bear some relation to objects around her. The paralysis diminished in the course of a few weeks, but the ankle clonus remained long after the other symptoms improved. The rigidity gradually disappeared, and the patient was able to talk fairly connectedly within six weeks after admission, but her demeanour was somewhat childish even up to the time she left hospital. At the end of two months she was able to walk across the room without assistance, and the arms recovered. She now began to talk incessantly, as if the energy of the speech centre had been accumulating for weeks and the patient were bound to make up for lost time. She had an attack of epidemic influenza while in hospital, but did not suffer much in consequence and quickly recovered from it.

The view of this case which is most likely to be correct is that the symptoms were due to embolism. The age of the patient was about 27, and there was no history of syphilis. On the other hand, there was no history of rheumatism and the heart sounds were normal. This fact would not of course negative the diagnosis of embolism, for slight vegetations might presumably exist on the cardiac valves without giving rise to symptoms or physical signs. It seems more probable that a sudden attack of hemiplegia and aphasia in a young person with enteric fever should be due to embolus than to hæmorrhage. The onset of rigidity may have been due to some inflammatory change taking place in the embolised area, and the rigor and pyrexia preceding it would point to such a conclusion. Of course the formation of a thrombus in one of the cerebral arteries might also be taken into account. If however, as one seems almost led to believe, there were actual endocarditis occurring in this case, it makes the case one of rather unusual occurrence, for endocarditis is a very rare complication in enteric fever. One German observer has found vegetations on the valves in certain cases of enteric fever where no murmur was audible during life; and this, although a rare occurrence, gives colour to the view that the above case might have been one of embolism. Perfect rest, low diet at first, and the use of strychnine in the later stages was the treatment adopted.

Two cases of phlebitis in the femoral vein occurred, and by means of rest and the use of opiates a perfect recovery resulted in each case.

In two fatal cases of enteric fever signs of commencing pneumonia were discovered previous to death; but, although the lungs were found much congested, no actual hepatisation was visible at the *post mortem.* In one of these cases a pint of blood-stained fluid was found in one pleural sac.

In one case of a boy suffering from enteric fever the patient became almost an imbecile during convalescence, and left the hospital mentally weak although physically recovered. There were grounds for believing that this was a return to his normal condition.

In conclusion, I may say that our experience of apparently mild cases was that they cannot be trusted to do well any more than apparently severe cases. Although treated as cautiously as the graver cases, some of our mild cases gave us the most trouble in the end; and I should be very chary of giving a good prognosis with confidence in any case of enteric fever however mild it might at first appear to be. In short, you cannot trust a typhoid patient until you see him leave the hospital, and even then he may deceive you. I regret that in this paper I have been obliged to give accounts of the cases in a sketchy and somewhat superficial manner. Had I done otherwise, I fear my essay would have exceeded the desirable limits. I can only hope, in conclusion, that some of the cases will be found of interest to those of my audience who have been engaged in similar work, and that my paper may be the means of bringing about an interesting discussion.

DERMATITIS HERPETIFORMIS, WITH REPORT OF A CASE.

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In 1884 Dr. L. A. Duhring, of Philadelphia, prophesied that as clinical attention was directed to the subject, and that as our knowledge of it grew, the remarkable disease which he then described before the American Medical Association and named Dermatitis Herpetiformis would assume an important position in Dermatology, with a result that many previously obscure and difficult cases would become plain and intelligible, and that cases previously set down as paratypical examples of various commonly occurring diseases would be classified in their proper category of the newly described rare disorder. This prophecy was soon amply fulfilled; for, although the accounts given of the disease in our text books are still fragmentary and incomplete, there is a general acceptance of the greater part of the author's creed, and a recognition that the complex of symptoms described by him represents a distinct morbid entity. It may be worth while to briefly enumerate the chief characters of the disease previous to giving short notes of a case which presented itself recently in my practice, and in doing so, to keep, as far as convenient, to the lines of Duhring's written observations.

Dermatitis herpetiformis is a comparatively rare disease, the general manifestations of which are diverse, yet together they form a well-defined group constituting an easily recognised picture. The cases are of varying intensity, and the severe ones may be initially or throughout febrile in character. The four great diagnostic characters of the disease are:—

1. The polymorphism of its lesions.
2. The grouped arrangement of its lesions.
3. Its pruritus.
4. Its chronicity.

The lesions may be " erythematous, maculo-papular, papular, tubercular, vesico-papular, vesicular, vesico-bullous, bullous, or pustular," and when long continued, may occur on a field of pigmented, scarred, or thickened skin. Pigmentation is, in fact, usually well developed in the more chronic cases, and is of a dirty yellow, or brownish, or variegated hue. There is a marked liability for the disease to be polymorphous, although for the detection of such multiformity prolonged observation may be necessary, as in any one attack only one form of elementary lesion may be present, while in succeeding attacks, another primary lesion may characterise the eruption. For example, vesico-papules may be present in one, and pustules in the next attack. Two or more kinds of lesion co-existing is the rule however. With regard to the erythema-like variety, it has been remarked that in description it is not very clearly differentiated from Erythema multiforme, although it certainly appears that in practice the clinical differences are considerable, especially in the direction of polymorphism at sequent attacks, the presence of pronounced pruritus, and the generally greater inclination to prolonged and inveterate course; while Erythema multiforme is an acute disease of short duration with a tendency to recurrence. Duhring tells us that some cases of his disease closely resemble multiform erythema, and it is as well therefore to bear in mind the points of diagnosis; he goes so far as to say that the multiformity of lesions manifested in the natural evolution of the disease is its *chief characteristic.*

It is manifest that in a disease characterised by these protean and diverse anatomical peculiarities the diagnosis cannot be made from the eruption only, but is based upon the general aspect of the case regarded as a whole. One factor in this general appearance is the notable inclination of the lesions to group or to be evolved in patches or to assume even a corymbose arrangement as it is usual to term it. It was this tendency which induced its describer to select the word "herpetiformis," concerning which his critics have had much to say. This feature, although of value since it is the rule, is not constant but liable to variation even in different attacks occurring in the same patient: on one occasion the lesions may be disseminate and on another, grouped. The eruption may affect any part of the body.

Itching is a prominent feature of the disease and is usually intense; it is most severe in the vesicular type. Rarely, especially if the eruption is pustular, itching may be slight or replaced by a burning sensation. And lastly, the subjective sensations may precede the efflorescence. As a secondary consequence of the pruritus excoriations are generally present, and may even obscure the discrimination of the elementary lesion.

The *course* of the disease is essentially chronic; continuous but not necessarily progressive, in fact it may become, with the lapse of time, milder in type. There are repeated attacks at intervals of months or years, and Duhring has known cases last continuously for ten or fifteen years with occasional intervals of quiescence lasting months.

With regard to prognosis there is reason to believe that complete recovery has taken place; but there is no hope of speedy cure. There is little doubt that the disease owns a neuropathic origin, although I am not aware that micro-biologists have yet turned their attention to the contents of its vesicles or blebs. Both sexes suffer chiefly in early or middle adult life. In women it is more frequently found in the married, especially during pregnancy and in the parturient state.

When he first described the disease Duhring met with praise on the one hand for having co-ordinated stray and isolated dermatological cases, and was assailed on the other for the unhappiness of the title he had selected. Bulkley suggested

Dermatitis Pruriginosa; Morrow preferred Tropho neurotic Dermatitis; Piffard uses Dermatitis Multiforme; while others advocated the adoption of D. Neuritica, all of which suggestions indicate features of the condition. (The disease should not be called, as it often is, Duhring's Disease, for this title may equally apply to Pruritus hiemalis.) There was an agreement that probably the author had been too bold in including in his description conditions which had previously been claimed by other observers as distinct morbid entities; for his definition was wide enough to include Hydroa herpetiforme, Hydroa bulleux, and Pemphigus arthritique of Bazin; Pemphigus pruriginosus of Hardy; Herpes Gestationis of Milton; as well as Herpes circinatus bullosus and Pemphigus diutinus pruriginosus à petites bulles. It included also the two fatal cases of Herpes vegetans of Auspitz, one of which is included in Hebra's five cases upon which he based his original description of Impetigo herpetiformis.

As might be expected, under these circumstances the reigning powers were inclined to object to the annexation of territories which they alleged were already Protected States, and they openly declared that the sphere of influence of Dermatitis herpetiformis was too far-reaching. At the same time it was perfectly clear that a good step in the right direction had been taken; and that the general collection of clinical symptoms indicated by the author was not a very uncommon one seemed clear from the expressed experiences of dermatologists; for even those who had not previously met with or diagnosed such conditions were not long in doing so. What made Duhring stand head and shoulders above his critics in this relation was the fact that his views and observations were based on long standing and laborious investigations. Many of his cases had been under his care for years; from this we should expect that his more recent utterances on the subject would largely coincide with his earlier ones, and such is found to be the case.

The most animated controversy has been carried on as to the identity or non-identity of D. herpetiformis and the Impetigo herpetiformis of Hebra. Duhring believes that the pustular variety of his disease is one and the same condition as the severe, acute, generally fatal, and probably septicæmic pustulosis, described by Hebra in 1872, as Impetigo herpetiformis, that this variety occurs in both sexes, notwithstanding the views of the Vienna School* to the contrary, and in women independent of pregnancy. The view of the identity of the two diseases is very strongly traversed by Kaposi, and it is generally regarded with success. The type of cases met with up to now in England has been such as to support the view of the non-identity of the two diseases.

Treatment varies with the particular stage or type of the disease with which we have to deal; and when the multiform character of the condition is remembered, it will be understood that what will suit one stage may aggravate others. The erythematous is the most difficult form to deal with, and requires the mildest remedies; but in all cases, generally speaking, topical applications of a soothing character are useless. The best remedies are those of a stimulant nature, such as tar, phenol, sulphur, thymol. Duhring's most recent views are that *inunctions* of strong sulphur ointment (ʒii. ad ℥i.) are the best treatment. Tar may be used in weak dilution in the erythematous form. Arsenic internally has appeared to do good; and the St. Louis physicians appear to rely upon the arseniate of soda. It is believed that abstention from alcohol is essential to successful treatment.

C. T., a tall girl of florid complexion, ætat 15½, who had grown very quickly, and whom her mother described as "shockingly nervous," was brought to the hospital early in the present year. The only notable features in the family history appeared to be that all her grandparents died young, viz., at 44, 27, 29 and 31 years old, and that her maternal grandmother died from heart disease, the result of acute rheumatism. Her father is a delicate man without particular disease. Her mother received a severe nervous shock a few days before the patient was born.

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* Kaposi has had a fatal case in a young man.

Previous history shewed that as a child C. T. was nervous and excitable, so much so that schooling had to be suspended for two years, owing to obscure nervous symptoms and night screaming having been induced by any attempt at tuition. From the age of four to puberty she suffered from frequent typical migraine. Riding either in a carriage, a tramcar, or a railway always produces and has produced vomiting and so much general prostration as to necessitate bed. She presents a disease of the skin which began more than two years ago, about a month prior to the first appearance of the catamenia. Since that time she has continuously had a symmetrical eruption on both hips, buttocks, and the outer aspect of the thighs in the upper two-thirds. The characteristic lesion of the eruption is not easily determined, for the intense pruritus attending it leads to scratching and obliteration of the primary lesion almost as soon as it appears. The affected parts present "scratched skin," pigmented and scarred, the pigmentations affecting chiefly the sites of old papules. There is no crusting and no pustulation.

At subsequent visits it was seen that papulo-vesicles were present in the diseased area, often manifestly arranged in circumscribed groups of some four to eight lesions. When the disease first appeared, her mother thought it was chicken-pox, for the lesions were pock-like; but in succeeding attacks a less prominent element has characterised the eruption. At first there was absent that tendency to group which for the last eighteen months has been pronounced. In such groups there generally appears to be a central papule, which "comes to a head" or developes much more than those situated near or around it. On one occasion two pruriginous papules appeared on the forehead and lasted three weeks. She abstained from scratching these, but their site is still indicated by two well-marked small cicatrices. There is some slight appearance of the rash in the lumbar back and between the scapulæ. It is to be noted, too, that in the affected parts there are very numerous atrophic white unpigmented scars, which have appeared quite independently of the occurrence of lesions upon them, and are, in fact, very much smaller than those pigmented cicatrices which indicate the situation of old vesico-papules.

The striking feature of the case is that the disorder becomes periodically exacerbated for a few days or week before the menstrual time. Since its first appearance the condition has not once left her, but in the intermenstrual interval it becomes much less pronounced and troublesome than at the epoch. When the flux is due there is always a more marked evolution of the vesico-papules. On one occasion the appearance of the menses was delayed for a few days, and during this time the more marked eruption and the intensification of the itching were almost unbearable. On the other hand if the flow comes true to time, or, better still, if its appearance is anticipated by a day or two, the acute attack is cut short, much to the patient's satisfaction: there are then fewer papules and less pruritus. On three successive months opportunities were afforded by the patient's visits to the clinique to verify the alleged regular accentuation of the skin condition at the menstrual time.

Treatment consisted in the application of dilute sulphur ointment, which produced some amelioration if applied when the itching fit came on. Later, cod liver oil and Donovan's solution improved the general health; but at the time of writing, five months' treatment has not greatly improved the local condition.

Apart from its direct interest, this case seems to indicate that there may exist a special sympathetic relationship between the cutaneous nerves of the gluteal region and outer side of the thighs with the plexuses of the pelvic reproductive viscera. The commencement in these parts of a skin disorder of obvious nervous origin at the time these organs pass into their stage of functional activity, and the regularly recurring intensification of the disease at the time of their menstrual hyperæmia, bear out this view, which also gains support from the known locality of menstruation pain and aching. It would be in these parts, therefore, that counterirritation addressed to the pelvic organs might appropriately be applied.

SOME ASPECTS OF THE PRESENT STATE OF GYNÆCOLOGY.*

BY THOMAS SAVAGE. M.D., M.R.C.P., F.R.C.S.,
PRESIDENT OF THE BIRMINGHAM AND MIDLAND COUNTIES BRANCH
OF THE BRITISH MEDICAL ASSOCIATION.

Gentlemen,

My first duty is to express to you my sincere thanks for the very honourable position in which you have placed me by making me the President, for the coming year, of this large and important Branch of the British Medical Association. Perhaps ours is the most important Branch in the Association, for its number of members is large, and its influence is probably second to no other. I notice that the list of former Presidents of the Branch contains the names of most of the prominent and eminent men who have lived and practised in the city and district; and to be placed among them is in itself an honour to which it is a justifiable ambition on the part of any man to aspire. I take it that the Presidency of this Branch is the highest honour which the local profession has it in its power to bestow upon its fellows.

I propose to take for the subject of the following remarks "Some aspects of the present state of Gynæcology." The whole subject of gynæcology has become so broad and extensive of late years that although it is a legitimate specialty, and specialism has been defined as a defect and an incompleteness, yet it would be manifestly impossible to treat in one short address, like the present, all the various questions which are prominent in our minds.

Why are the Gynæcologists so given to dispute, controversy, and quarrel? So prone to mutual recriminations, and to attributing to each other of unworthy motives? If we look to the other great specialty, Ophthalmic Surgery, we see men of opposite schools agreeing to differ, and living in the greatest harmony and brotherhood. The ephemeral and journalistic literature of gynæcology is to day most appalling and overwhelming in amount and often in personal bitterness; and it would appear as if no man could attain to the proper knowledge and treatment of the diseases of women unless he had been *en évidence* before the profession or in the journals, or had written a book, or had devised some special mechanical contrivance of his own, or a modification of someone else's. What a contrast to the scanty articles, letters, etc., of the Ophthalmic Surgeons! Why is this? May not one cause be that the latter have attained to a stage in advance of us so far as progress is concerned? They had the start of us by a few years, and may perhaps now consider that they are so much the nearer a state of finality. In addition to this their art is a much more restricted one in its area, and also a much more exact one, and one which in its pursuit and practice does not involve the same grave issues of life and death.

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* Address read at the Annual Meeting of the Branch, 18th June, 1891.

That we have laid ourselves open to unfavourable criticism on account of our tendency to fickleness in pathology and treatment from time to time must be allowed by all of us. I call to mind the time of the glories of the Fergusson's speculum, when no man considered himself properly equipped for his daily round without having with him his bag containing the speculum and stick of nitrate of silver; but armed with these, he felt himself able to attack the whole of the diseases of women.

Then, again, take the pessary mania. In my student days a Simpson's shelf pessary was considered alone sufficient for the treatment of displacements of what kind soever. Then a reaction took place, and about fifteen to twenty years ago the pessary fever may be said to have been at its height. Practitioners carried pessaries about with them in their pockets and bags, so as to be ready to insert one at a moment's notice; and it seemed incumbent upon nearly every budding aspirant for gynæcological fame to invent a special instrument of his own, or a modification of someone else's, if he were to expect to obtain or retain the confidence of his professional brethren or the public. This has happily passed away, though some may think we have swung the pendulum too far the other way; but a more rational use of the pessary has certainly come about. We have learnt that occasionally a pessary may be of very great service if properly applied in suitable cases, but that when, as it used to be, indiscriminately used, it is capable of bringing about greater evils than it was intended to cure. Nowadays a pessary is comparatively seldom used, but when it is, it is used so as to do real service. The mechanics of the pelvis are better understood than formerly, and therefore less mechanical treatment is resorted to. Dr Champneys has very wisely said that the "local treatment of diseases of women is only justifiable when it is necessary."

The time is not so far distant when almost every ailment in a woman's pelvis was referred to the uterus as the seat; and many were the devices and applications made to an unoffending organ. In an address of sound common sense Dr. Clifford Allbutt, a few years ago, held up to ridicule the "nimia diligentia" of the practitioner who would not mind if his patient's nose were a little on one side, but who would on no account suffer her uterus to be out of the normal line; and who, while he would not object to a little running from the nose, would not tolerate such a state of things in connection with the uterus. And this much-enduring organ does not seem to be much, if any, the worse for receiving so much less of the fussy and often unnecessary attention that was previously bestowed upon it.

The practice of electrolysis seems to be another example of "Fashion in Physic." The use of the positive acid pole to the interior of the uterus is often attended with good effect as a caustic and astringent, but it is now being pushed by its too zealous advocates as the most efficient, if not the only proper, method of treating the hæmorrhage arising from a submucous myoma. Cannot we say pretty much the same of several other remedies of bygone days which acted in a similar manner and were equally efficacious? At one time the actual cautery was applied in suitable cases, and it not infrequently had the effect of arresting the bleeding, or even sometimes of producing a huge slough, which became extruded, with a resultant cure. Then, again, nitric acid has been applied, and other escharotics more or less strong, with a very similar result. Three years ago I had a patient with a large tumour which could not be removed by hysterectomy, and as the bleeding was telling very considerably upon her health, I tried electrolysis, using the positive pole to the uterine canal, with the result that the hæmorrhage ceased and the patient was much relieved. I then lost sight of her, as she went to the North of England. About six months ago Dr. Ashburner, of Ulverston, sent her to me for a repetition of the treatment on the return of the hæmorrhage. As my machine was just then out of repair, and she was anxious not to delay, I applied fuming nitric acid four times to the interior of the uterus at intervals of about one week, with exactly the same good result as when the electrolysis had been used. As an intra-uterine application, as a caustic or styptic, the positive pole is an addition to the therapeutic means at our disposal, and in so far as it is thus considered and used, there is no objection to it; but, like so many new remedies, the electrical treatment appears to run great risk of abuse. It has been recommended by Dr. G. Gautier, of Paris, and others to use the intra-uterine negative galvano-caustique in cases of pyosalpinx. It certainly seems difficult to see the *rationale* of such treatment. Then, again, the negative puncture is advised by some for the same class of cases. Now this plan cannot be very far removed in detail and effect from ordinary puncture and drainage; and yet if there is one thing definitely settled by the work and experience of the last few years, it is that puncture of a pyosalpinx, per vaginam, is a very risky and uncertain operation, and that the removal by abdominal section is not only superior to puncture, but that it is the only rational and successful treatment. Electrolysis has also been advised and indeed used for cystoma. This almost universal recommendation of one remedy for all the varieties of gynæcological ailments would seem to be bordering upon the incredible, and certainly the ridiculous, and must tend to lower that proper estimation with which the public should regard us as rational and intelligent physicians. But we are reminded by it of "Fashions in Physic" which have preceded it in every department of medicine. At one time nearly every woman was found to require her cervix to be divided by a hysterotome, of a construction specially devised by the particular operator. So numerous were the patients requiring this treatment that the operation was frequently performed in the physician's own consulting-room. More recently, from New York, the discovery has been made that nearly all the local inflammations, discharges, and neuroses of women were caused by their possessing a lacerated cervix, with the scar involving a nerve end or the vaginal roof, and that its relief by a plastic operation was the sure road to health and vigour!

But with all our deficiencies we have something tangible to shew. We have learnt much, and we have had to unlearn much of what we at one time believed to be true. We have learnt that the uterus is not the all-important organ in the sexual economy of women that we once credited it with being. We now look upon it as being quite secondary in physiological and also pathological import to the ovaries. Though both are important the egg is clearly of higher consideration than the nest in which it has to rest. As a consequence of holding this view, the ovaries and tubes have attracted a greatly increased interest of late years, and their treatment has been attended with gratifying results, such as were scarcely dreamed of in years gone by. And so our thoughts are directed to the uterus less and to the ovaries more.

A characteristic of the gynæcology of to-day is that, in addition to common sense, there are brought to bear upon its diagnosis and treatment the other senses of sight and touch in an especial manner. We weigh, measure, and look for ourselves; hence has arisen perhaps the frequency of the expression, "exploratory incision," the practical adoption of which, I think I may say without flattery or fear of contradiction, but with some amount of pride, has been a characteristic of the Birmingham School of Gynæcology. Although I am not prepared to put forward as an aphorism of universal application—"If you do not know the nature of the disease or tumour in the pelvis, open the abdomen and see"—yet I am sure there is more than a grain of wholesome truth, science, and wisdom underlying it. We ought to approach to some accuracy in our diagnosis seeing how the organs are so arranged in the abdomen, and more especially in the pelvis, as to render them easily accessible to sight and, more so still, to touch.

Another sign of the improvement in the work of to-day is, that while we are alive to all the numerous local disorders which are to be found in the pelvis, and know something of their causes, pathology, and best means of treating them, we are less prone to magnify their importance and to rush to heroic measures for relief. We do not now affirm that every torn cervix must be the cause of much local trouble and the seat of more neurotic symptoms, and must needs therefore have a plastic operation for its repair; but we can, if the case requires it, give some relief to local trouble by a well timed operation, carefully performed. And the perfection of the manner in which such an operation can now be performed is often largely due to the abuse with which it was done in the first instance of its adoption, when its introduction was brought about by some enthusiastic meddler and candidate for notoriety.

By far the greatest advance made in gynæcology is the one which was first begun by Bernutz in regard to the conditions which he described as pelvic peritonitis and pelvic cellulitis. He clearly recognised the two states in the *post mortem* room, and endeavoured to differentiate them clinically. The late Matthews Duncan also worked later on at the same subject, and made some advances. He named them Perimetritis and Perametritis respectively; and it is curious to note that while he got so far, he was not allowed to discover the promised land of successful treatment, and to see that each, quite different pathologically, required, speaking generally, a different mode of procedure. This was reserved for abdominal section in the living subject to reveal; and it has at last been clearly ascertained that the so-called pelvic peritonitis, being a diseased condition inside the peritoneum, is always associated with disease of the ovaries and tubes, and requires operative treatment if more than nature and expectant treatment are necessary, and that the cellulitis, being a phlegmon within the broad ligament, and therefore *outside* the peritoneum, seldom requires operation, time and rest alone being generally necessary to promote resolution or favour suppuration and escape of pus through the nearest outlet. A puncture may be required through the vagina or rectum, and in a very few cases, if the accumulation becomes very great, an abdominal section may be called for to open and drain the sac.

In the first class of cases, those of pelvic peritonitis, resolution may take place so far that nothing is left behind but adherent organs, which may not interfere with the comfort and duties of the patient otherwise than to induce sterility. Such are often cited as instances of cure. But in the majority of instances a lump of exudation, serum, or pus remains, and in these operative interference is called for. If no operation is allowed, the patient's condition is at the best one of chronic invalidism; whereas if the diseased appendages are removed, her future state is consistent with the greatest enjoyment of physical health In the order of events in these cases the following occurs:—First, the exudation or phlegmon, then pyosalpinx, and, later on, hydrosalpinx. I have come to the same conclusion as Bland Sutton, viz., that hydrosalpinx should be regarded as a later stage of pyosalpinx. Most of the cases of so called chronic ovaritis or perioöphoritis are or commence as cases of salpingitis The frequency of pelvic peritonitis is very much greater than that of pelvic cellulitis. I have a strong impression that many of my medical brethren think the opposite.

Years ago, in the early days of ovariotomy, when surgeons, as it has been quaintly described, "timidly stood on the brink of ovarian waters," shrinking to take the plunge; when operators were called "belly-rippers;" when success was the exception and failure the rule; when a coroner's inquest, with a possible verdict of manslaughter, was staring in the face of an unsuccessful case; it required some courage, faith, and self-confidence to lead the way to the position at which we have now arrived. And to the pioneers of the past—only naming Sir Spencer Wells and Baker Brown among many others—we ought to accord all praise. But while we do so ungrudgingly, is it not possible that some of these pioneers of early days may have progressed up to a certain point and then have stayed their hand of progress, and have left to others to continue or complete the work which they had begun? And is it not also possible for a man not only to stand still, as far as further actual progress is concerned, but even to be, later on, an active obstructive to advance?

The opponents of the present advanced school say that the patients who have diseased appendages will get well with time and rest, and will very rarely die if not operated upon, while those who are operated upon have a mortality of considerable size—say five to ten per cent.—and that it is not fair to subject patients, who would not otherwise die, to this large mortality. Now a great fallacy underlies this statement First of all it must be admitted, I think, as true that many cases in the past which have undergone operation might have recovered with time and rest, because the zeal and enthusiasm of a new remedy led doubtless to some unnecessary operations, as has always been the case, especially with younger operators. In the second place, it is not true to say that very few die if let alone. I myself believe that the percentage of deaths is not inconsiderable; *e.g.*, a burst pyosalpinx causing a rapid death. In the absence of *post mortem* verification, it is put down to so-called "idiopathic" peritonitis. Then, thirdly, the deaths after operation are not nearly so many as is often alleged. But, for the sake of argument, I will assume that the deaths are the same in each case, viz., whether an operation has been done or has not. This will dispose of the "death" question; but there remains the other and equally important one, viz., the question of relief; and here I say unhesitatingly that the relief to be obtained by operation is far and away above anything to be gained by medicine, rest, and ordinary expectant treatment. Are not metrorrhagia and pain important conditions which we should do our best to be rid of? and are time and rest, etc., so easy and simple to carry out that we, without a thought, dismiss our patient from our consulting-room by telling her, with an encouraging smile, to give nature a chance, to be patient, and to rest? Then, with the rest and the time, what occurs? Why, the damaged organs still remain, though for the time they may be quiescent. By the most sanguine they can scarcely be expected to be able to regain their normal functions and relations to surrounding organs, and, being present, they are liable on slight provocation to light up again the original disorder.

The discussion, or, I should rather say, the controversy is characterised by being engaged in chiefly by those who have an essentially medical, as distinguished from a surgical cast of mind, who have themselves performed none, or at most but few, of such operations, and have seen little of the practice of others. The attitude taken up in regard to this question is also to a large extent determined by the peculiar characteristics of the individual's mind. A cheerful, sanguine temperament will incline a man to be hopeful, and therefore to favour operative measures, while a cautious, over-careful temperament will rather dissuade from the operative side of treatment, and advocate rest and medicines.

By far the worst feature which is imported into the dispute is the one of motive, which is alleged to be one of gain, which prompts the surgeon to urge and to perform operations which, in the mind of the other side, are not necessary. This is very like the argument of the anti-vaccinationist, who says that the medical profession advise vaccination for the sake of the gains which they make by its performance!! Could any notion be more absurd? The gains to the doctors by unobstructed small-pox, they themselves being efficiently protected by vaccination, would be infinitely greater than any that can be derived from vaccination; and so I think that pottering and tinkering with these chronic cases of diseased appendages, spread over a considerable period, would soon run up larger yearly bills than the one fee for the operation which cures them. Is it not proverbial that a good decayed tooth, which requires frequent attention, is worth much more to the dentist than another tooth which is extracted at the first visit and done with?

May we not with some propriety, whilst standing upon our merits, assume the offensive rather than the defensive attitude, and convey the war into the enemy's camp? As the opposition is almost entirely made by the so-called "Obstetric Physicians," men who are non-operators or who have seen but few cases, is it not justifiable to charge them with incompetence, and to retort that they do not, in the light of our present knowledge, do the best for their patients?

Doubtless it is the truth to say that some unnecessary operations have been done or advised, but that is nothing new in the history of medicine. As I have before said, new remedies are always at first much more widely applied than later on. When their exact field of usefulness becomes known their rational employment is correspondingly much more restricted. So it is here—diseased appendages are often, and rightly, removed; normal ovaries seldom or never.

In cases of abdominal section it is curious, if not instructive, to note the different conclusions that are arrived at by men having in each case abundant experience. Take, for example, the subject of drainage. Sir Spencer Wells and some others rarely use the drainage tube—never if they can help it; and the opponents of its use aver that hernia in the scar at the former seat of the tube is more likely to arise than when the wound has been at once closed up. My own experience is against this, and I believe that the presence of the tube does no harm at all. In consequence of holding this view I use it very frequently, on the principle that if it does no harm, and *may* do good, the patient should have the benefit of that possible good. If I have the slightest doubt pass through my mind I always drain, and I have never seen reason to regret it. In the majority of the simple cases very little fluid is removed; but I have sometimes found, even in simple cases, a considerable amount of red fluid escape, and sometimes even a small fibrinous or a dark clot. Surely it was better for such to be removed, seeing that the operation has been performed in the absence of the strictest Listerian principles, and instruments and hands have been only subjected to the milder purifications to be obtained by soap and hot water. In the cases of pyosalpinx I always drain, and I have found it necessary to leave the tube in for a much longer time than in the more simple cases.

Then as to flushing or washing out of the abdominal cavity. Sir Spencer Wells, in his recently delivered Bradshaw Lecture, said he had flushed out the abdomen only twice, and the patients got well in spite of the flushing! What a contrast to the experience and practice of many other operators. I believe it is now very frequently done at the Samaritan Hospital, and we do it at Sparkhill also very frequently. I say: If in doubt, flush the abdomen, so as to *ensure* the recovery of the patient.

I do not desire to enter upon the question of whether antiseptics are desirable or necessary in abdominal surgery, for indeed the practice of all operators who do not use them, and who can yet shew as good results as those who do use them, is a sufficient answer; and we have to thank cleanliness, care, and detail for what we have now arrived at. I cannot however fail to remember what was the custom in my student days, and contrast the then results with those of to-day. I remember the surgeon, priding himself on his long finger nails, who would go direct from dressing his stinking compound fractures to the operating-room. Here, washing of hands before operation might or might not be done, just as it happened, and then the surgeon donned an "operating coat." As the years rolled by, this same coat became an object of affection and pride to its owner, because on its sleeves it shewed the clotted remains of innumerable operations, having gone through a very lengthened campaign. Then the instruments were not always innocent of a little rust or a bit of old dead blood upon them in those days. Fancy asking a house surgeon to boil the scalpels or forceps for twenty minutes! And the sponges, where had they been? and what had been their life history for the previous few weeks? They were taken at random out of a drawer or bag, no one considering for what purpose or by whom they had been last used, or whether they had been subjected to an efficient cleansing. To me it is very interesting to look back upon those days, and compare then and now.

The suppuration of the wound of an excised breast was regarded as a natural occurrence, and not to be otherwise looked for, whilst the healing by the so-called "first intention" was held up as exceptional. Can we wonder at all this in the light of our present knowledge? The wonder is that there was no one to teach us a little of what we now consider merely common sense. I believe I am right in saying that it is not many years since that a hospital surgeon was also at the same time a demonstrator of anatomy!!

There are many cases in which after an attack or attacks of severe perimetritis the patient enjoys the most perfect health, and would be said to be absolutely well with the exception perhaps of being thenceforward sterile. Other cases there are in which the inflammatory state has subsided, and the parts have become quiescent, but anomalous aches and pains, more or less severe, are left behind as the result of the adhesions which have taken place and still exist. But for these adhesions and the pain they cause the patient may be said to be well. On several occasions, finding this to be the case, I have contented myself with merely undoing the adhesions, and not removing the appendages, and the result has so far been satisfactory. This we might expect to be so, because the organs, after the primary inflammation, have got down to their normal state, and the pains and discomfort arise purely from a mechanical cause. I believe if the adhesions are thoroughly undone, and the organs in the pelvis liberated, it will not follow as an invariable consequence, as some suppose, that the adhesions will renew themselves. This is certainly the case with the intestines, and it is of course to be attributed to the constant movements of the gut in the absence of active inflammatory exudation.

When the organs are diseased and are giving rise to symptoms of importance, the only remedy of any real value is their removal; and nearly always, if not quite always, both sides should be removed at the same operation. I have said they should be removed, and I have said so because it has become quite an article of my creed that when the appendages are diseased, however much they may be so, they *can* be got out. I have come to look upon it that if I do not succeed in removing them it is my fault, and that the attempted operation is a failure on my part, a want of that expertness which it ought to be my aim to attain. I think this is the proper standpoint to take to enable a man to become efficient in his work. Simple exploratory operations are much less frequent than formerly; and these failures diminish with each man's experience and dexterity.

Abdominal section has revealed the fact that extra-uterine fœtation occurs with a frequency which is astonishing compared with what used to be considered the case; and the new views concerning this frequent and alarming disaster have been confirmed by continued observation.

Seeing how much of the present state of abdominal surgery has been due to the work of the gynæcologists, it may not be inappropriate to refer very briefly to intestinal surgery. This branch of work comes so often before the gynæcologist that it seems as if it were as much part of his work as of the general surgeon; and it also shews the impossibility of any man being a pure specialist; he cannot be only one thing, since it must be borne in mind that in truth specialism *per se* is, as I said before, a defect, an incompleteness. A very grave responsibility rests with general practitioners as to the question of abdominal operations, when they should advise operation in cases of so-called hæmatocele, peritonitis, and other conditions. I will quote a few lines from a recent work as bearing upon this.

"A note of warning to the physicians that they should more clearly recognise that intestinal obstruction, which hitherto has been regarded by them as especially a medical case, should now be transferred to the operating surgeon immediately a probable diagnosis has been made; that perseverance in so-called medical treatment should not be insisted upon as heretofore; and that patients should have the benefit of whatever the advances of modern aggressive surgery are able to afford him. To let a patient die with acute intestinal obstruction without an operation is a grievous reproach upon modern scientific medical art."

In the future will these and other capital and delicate operations come to be performed by the pure surgeon, by a specialist, or by the practitioners generally? I suppose it is impossible to be quite impartial in any matter, and more especially. so where one's own interests are concerned; but I would, with all deference and due respect to my colleagues, protest against single or occasional operations of an important nature being done by non-specialists, or by those who are not likely to have a large experience in such cases. It would certainly not be right for me to do an iridectomy when there are several expert ophthalmic surgeons available. I am also quite sure that many of the cases of removal of diseased appendages involve difficulties and risks which nothing but a prolonged experience of such operations can overcome.

It is not so long since it was the custom to administer opium or morphia, as a routine treatment, in all cases of peritonitis and many other conditions in the abdomen. We have now learnt the inadvisability of so doing. May we not extend the withholding of these and similar drugs in other states? I have myself long thought that the general practitioners rely too much upon anodynes. Whenever there is pain, real or fancied, and sometimes the latter is the case, they seem called upon to give an opiate, forgetting probably that by so doing they often mask other and more important symptoms, constipate the bowels, and perhaps retard the recovery. I am well aware of the difficulties which the practitioner in attendance has to contend against, who has to bear the heat and burden of the case, and that it is easy for a consultant to step in once or twice and say that no morphia is required, and that the patient must try and bear the pain. The entreaties and fears of the patient and the friends have to be reckoned with, who consider the mission of the doctor is to relieve present pain first of all, and to treat the disease afterwards.

Upon this subject, in a recent short pamphlet, Dr. H. P. C. Wilson, of Baltimore, a man eminent in his own country, and well known over here at the Annual Meeting of the Association, says that we are too apt to relieve symptoms and too prone to forget the cure of the disease; and he goes so far as to say that in his opinion it is rarely, if ever, necessary to resort to opium for the relief of pain.

The treatment of the diseases of women, shewing the many-sidedness of their neurotic, emotional, and excitable nature, may be fraught with disaster if great care is not exercised in the administration of narcotics; and it is to be feared that thereby is aided, if not induced, that tendency to chronic invalidism which, when once established, it is so difficult to get rid of. In this matter of anodyne remedies and of too sympathetic and assiduous medical treatment, errors, rather of judgment than intentional, are often committed. I fear that the sofa and the bed, which are among our most valuable aids to cure, are at the same time not unfrequently also a cause of much prolonged invalidism, neurasthenia, and hysteria, through being indulged in through excessive and mistaken kindness and sympathy.

Gynæcology is nowadays very active, perhaps the most active of all the branches of our art, and changes take place and evolution of thought occurs with consequent divergencies in treatment. We see the old school gradually, though perhaps not peacefully, giving place to the new; and while in the morning we act the part of the surgeon and remove a large ovarian cystoma, in the afternoon we become physicians and dilate to our patients upon the necessity for a greatly increased muscular development among women generally, or upon the proper relation of stays to waists, and the bearing which such has upon digestion, anæmia, and other ailments.

I think we may not unwisely adopt as our own, Dr. Goodell's creed, viz.:—"I believe that the physician who recognises the complexity of woman's nervous organisation and appreciates its tyranny, will touch her well-being at more points, and with a keener perception of its wants, than the one who holds the opinion that woman is woman because she has a womb."

REPORTS OF CASES.

A CASE OF HOUR-GLASS CONTRACTION OF THE STOMACH, WITH AN ENORMOUS ULCER.

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Maria W., aged 31, married, was admitted into the General Hospital on March 3rd, 1891, complaining of severe pain and tenderness in the stomach. On the day of her admission she twice vomited watery fluid matter depositing a sediment like coffee grounds. Her family history was good except that her mother's sister had died of phthisis. She had scarlatina at the age of ten and ten years ago; when she was twenty-one she had what she called "inflammation of the stomach and bowels;" she had a pain in her belly but there was no hæmatemesis. Seven years ago she suffered from "ulcerated stomach" with coffee grounds vomit. Again, four years ago, she was ill with the same complaint but she did not remember any hæmatemesis. She recovered from this second attack and was able to take all kinds of food except vegetables freely and without pain. Last year she had influenza which weakened her considerably, and since then she had had trouble with her digestion, leading up to her present illness which she dated from last September. Her home was comfortable and her food abundant. She had never borne any children.

Her present attack began with pain in the left hypochondrium radiating round to the back, and vomiting, sometimes immediately, at other times two hours after food. The vomiting relieved but did not entirely remove the pain. There was no hæmatemesis. Her bowels were very confined, and she began to lose flesh. At Christmas she vomited more than half-a-pint of blood, and passed a lot of blood by the bowel, the motions remaining black for some days. There was no return of hæmatemesis till the day of admission, but the pain became so severe and the vomiting so troublesome that she applied to the Hospital and was admitted.

She was a very tall, emaciated, anæmic woman, with an anxious expression of face; no jaundice, cyanosis, or œdema, T. 99, P. 104, R. 32. Her lips were pale and dry; gums pale and bleeding easily; teeth very defective and carious; tongue large, pale, coated with a whitish fur. Appetite good; thirst great; deglutition normal; frequent hiccough. She complained of great flatulence and acidity. There was frequent pain over the stomach which was at once greatly increased by taking food, and was only relieved by vomiting which occurred usually half an hour to an hour after a meal. Bowels constipated. The abdomen was retracted and soft, except just to the left of the epigastric region where there were some resistance and pain on pressure. Outside this spot no pain was felt. The stomach resonance was not increased. Liver dulness in V. M. L. 3½ in. Splenic dulness in M. A. L. 2½ in.

At the apices of both lungs the percussion note was rather impaired, and there were some crepitations audible at the left apex. There was neither cough nor expectoration.

The heart's area of dulness and the position of the apex beat were normal. The first sound at the apex was booming, and the second sound at the base was reduplicated in both the aortic and pulmonary areas.

The urine was diminished, 28 ounces in twenty-four hours; sp. gr. 1030, acid, free from albumen, sugar, and blood; no deposit.

She had menstruated regularly up to last September, but since that time the quantity had been less and she had missed her period altogether once or twice.

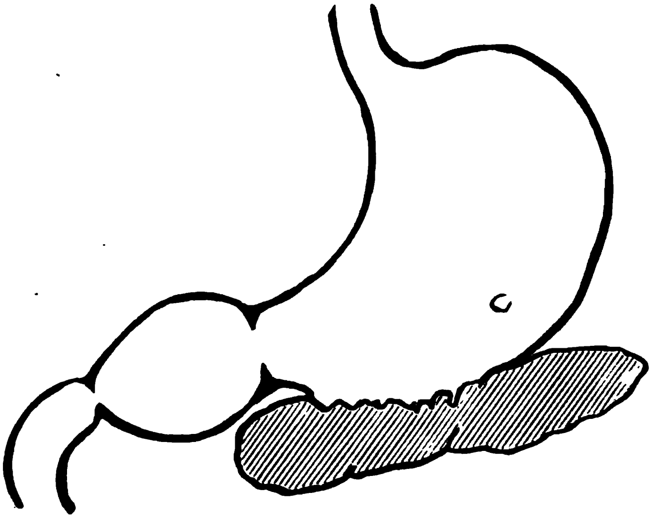
The case was diagnosed to be ulcer of the stomach. The patient was ordered a simple enema, and a teaspoonful of iced milk and lime-water at a time by the mouth, with ice to suck, but as she vomited blood after admission the milk and lime-water were stopped the next day, and she was ordered to be fed by nutrient enemata of beef tea, milk, and egg beaten up.

On March 7th the teaspoonful doses of milk and lime-water were resumed, to be given about every twenty minutes, and were so well borne that they were gradually increased to a tablespoonful every half-hour; and on the 9th she was ordered M. magn. sulph. c. ferro. She went on well, getting to take chicken diet, the pain and tenderness having disappeared, until on the 20th the pain returned, and on the 21st she vomited again, so milk diet was resumed. After this the vomiting continued to recur at intervals of two or three days, and the pain was always present, not being relieved by simple means, *e.g.*, bicarbonate of soda and peppermint water. On March 27th the vomit is described as being like thick yeast, and giving the guaiacum reaction. She complained of night sweats. She was ordered milk and lime water again in half-ounce doses every hour, but vomiting still occurred occasionally, and there was so much pain that a solution of morphia was prescribed for occasional use. On April 11th the vomiting seemed worse, so that all feeding by the mouth was given up and nutrient enemata again were employed; her medicine was also stopped, and the stomach was given complete rest. Her breath was extremely fœtid. On April 18th feeding was attempted by the mouth with small quantities of beef jelly (beef essence), the enemata being continued, but she vomited again, so it was stopped. Her breath was so very offensive that she was ordered the following mixture—

℞ Sodii bicarb. ... gr. x.
Sodii salicylatis ... gr. x.
Liq. morphinæ ... ♏ x.
Aq. menthæ pip. ... ℥ j.
Ft. Ht. omni horâ sumendus—

as an antiseptic and anodyne to the stomach. On April 28th she was ordered peptonised milk, one ounce every hour, but she vomited eight ounces on the same day and ten ounces on the 30th. The vomited matter on this occasion was examined by me; it was very foul-smelling, alkaline, and gave no evidence of containing free hydrochloric acid (phloroglucine-vanilline). The mixture was continued with the addition of a minim of creosote to each dose. On May 7th she vomited again, but the matter had very little evil smell and was acid, but gave no free hydrochloric acid reaction. She seemed more comfortable, and continued to take the peptonised milk with beef tea and eggs beaten up. But on the 10th she was suddenly seized with symptoms of perforation, intense pain in the abdomen, vomiting, and collapse. The abdomen was not distended, but tender. She died the same evening.

Autopsy.—With the exception that the heart was small and that its muscular fibre shewed some degree of brown atrophy, the organs outside the abdominal cavity were normal. Abdomen slightly distended; general septic peritonitis; half a pint of purulent fluid in pelvis. The stomach was hour-glass shaped, and bound down to the left lobe of the liver by old inflammatory adhesions. It was divided in two cavities by a narrowing situated about five inches from the pylorus. The opening between the two cavities admitted one finger. There was no appearance of a cicatrix or thickening here, and the microscope shewed no changes in the mucous or submucous coats around it. In the cardiac portion there was a large ulcer, about four inches long, situated along the greater curvature. This had exposed the pancreas, to which it was everywhere adherent except at one point which had given way. The exposed pancreas was ragged and partly digested. The edges of this ulcer shewed no trace of any carcinomatous thickening. There was another ulcer, the size of a shilling, situated on the posterior wall. The mucosa presented the appearance of gastritis chronica glandularis. The mucosa of the smaller cavity was fairly normal.



The figure gives a diagrammatic view of the shape of the stomach and the position of the ulcers.

Remarks.—This case is remarkable for many reasons. Its duration (seven years at least) is very exceptional. The size of the ulcer, too, is very great, though larger ones have been described (Cruveilhier, Habershon); and the tolerance of the stomach for food, in spite of this enormous lesion, was very considerable. The absence of free hydrochloric acid is explained by the coexistence of gastritis, by which the glands had been destroyed; but it makes the occurrence and persistence of the ulcer the more remarkable if we accept the usual view that hyperacidity is an important factor in the ulcerative process.

But perhaps the most interesting feature is the hour-glass contraction of the stomach. This presented all the features of a congenital malformation; that is to say, there were no indications of any inflammatory process to cause the constriction. Bland Sutton ("Evolution and Disease," London, 1890, p. 146-7) asserts that this condition is never congenital, and makes the statement that it has never been observed in children. This is contrary to the view generally received by pathologists and to the appearances in this case. If it was a congenital defect, what part did it play in the etiology of the ulcer? It would seem that it may have led to a prolonged stay of the over-acid chyme in the pyloric portion, and the part affected is just the most depending part where this condition would be longest in operation. It is probable that the ulcerative process had recently been stationary, and that the rupture was due to mechanical causes (vomiting).

The diagnosis of such a state of things as existed in this case is plainly impossible in the present state of our knowledge, and cannot be regarded as an objection to a method of treatment which has been attended with the happiest results in a large number of cases. (See "Clinical Lecture on Ulcer of the Stomach." *The Lancet*, February 14th, 1891).

PERISCOPE.

◆

DISEASES OF CHILDREN.

BY ANNIE E. CLARK, M.D.

The Geographical Distribution and Etiology of Rickets.—Palm—(*Pract.*, Oct. and Nov. 1890). The author from observations made by himself, and from information obtained by correspondence with medical men in China, Japan, Thibet, Morocco, and India, shews that Rickets is a rare disease in these countries, and considers that this disproves the view that there is a connection between Syphilis and Rickets, the former disease being common in many of these countries. As to diet, the working classes of Britain are better fed than the masses of China and India, whilst the total disregard for cleanliness and sanitary precautions in a crowded Chinese or Indian City is even worse than that found in the poor and crowded districts of our large cities, so that the only condition which compares favourably is the clear and bright atmosphere enjoyed in China and India in place of the comparatively sunless and smoke laden atmosphere of our large towns and cities.

A study of the distribution of Rickets shews that a dry, clear atmosphere with abundant sunshine is characteristic of non-rachitic areas, and that a wet soil, and humid sunless atmosphere are favourable to its prevalence; he therefore believes that the want of sunshine is a most important factor in the causation of the disease, and in further proof of his position gives most interesting facts regarding the action of sunlight upon plants and animals.

Hernia in Infancy, and its Treatment.—By W. B. Garmo, M.D. (*Arch of Pediat.*, April, 1891). Dr. de Garmo in his paper calls attention to the fact that congenital inguinal hernia is by no means confined to the male infant, as by many it is assumed to be; but states that he has found that at least one-tenth of the cases of inguinal hernia occurring in children under five years occur in females. Treatment results more promptly in cure in the female, from the fact that the canal has not been distended by the transit of the testicle. Just as in the male there may be a hydrocele, either reducible or developing after all communication with the abdomen has been cut off, and it is important to keep this in mind, or an error in diagnosis may result, and forcible attempts made to replace what appears to be an irreducible hernia. The author has found constipation the most frequent immediate cause of inguinal and umbilical hernia in children; next to this he would put long continued crying, and then tight belly-bands, which throw the abdominal contents to the pelvis, and place an unnatural strain upon the lower abdominal wall. Whooping cough is another common cause and is a troublesome complication in cases under treatment. He does not however look upon phimosis as such an important factor as it is often considered, but is convinced it is of comparatively little importance.

Infant Feeding (*New York Med. Journal*, Feb. 1890). In a paper read before the New York Academy of Medicine Dr. A. Seibert suggests that the quantity of food given to a child should not depend upon the age of the child, but upon its weight, as it is likely that the capacity of the stomach will be in relation to the size and weight of the child, rather than to its age. For a child of less than eight pounds in weight, he gives three ounces of food at a time, the child being fed every two hours in the day and twice in the night. From nine to ten pounds he gives four ounces with the same frequency. Between ten and fourteen he gives five ounces, and gives it five times in the day and twice at night. When weighing fifteen and sixteen pounds he gives six ounces at the same intervals. Between seventeen and eighteen pounds he gives seven ounces at a time and only feeds once in the night. Above this weight he gives eight ounces at the same intervals. The proportion of milk to water he gradually changes from one in three to pure milk at the last mentioned weight.

On the Treatment of Nocturnal Enuresis in Children.—Van Tienhoven (*New York. Med. Rec.*, 1890., xxxviii., p. 280). The author read this paper in the Tenth International Medical Congress, in it he holds that incontinence of urine in children depends upon an insufficiency of the sphincter vesicæ muscle, which allows the urine to enter the upper portion of the urethra, and so excite the reflex action of the detrusor urinæ.

The fact that in these cases enuresis generally occurs during the first hours of sleep, makes it improbable that it is due to ordinary distension of the bladder, and he believes that the incontinence can generally be relieved by making the children sleep upon a bed with the foot raised so that the urine should flow away from the neck of the bladder and thus prevent the source of irritation. He had treated fourteen children in his hospital practice in this way, and all the cases were cured without the use of any drug. The only other precaution taken was to see that the bladder was thoroughly emptied on going to bed and no fluids allowed before going to sleep.

ANATOMY.

BY PROFESSOR BERTRAM C. A. WINDLE, M.A., M.D., B.CH.,

On the Mastoid Region of the Skull.—Prof. A. E. Birmingham (*Dub. Journal of Med. Sci*, Feb., 1891.) The practical conclusions drawn by the author from his examination of this region in a number of skulls, were laid before the Anatomical Section of the British Medical Association at the Birmingham Meeting, and appear to be worthy of the careful attention of operating surgeons. He states his views as follows:—

1. The lateral sinus varies to an extreme degree in position and shape. The surface markings given for mapping out its course are occasionally as much as an inch astray, and this at a point where there is danger of wounding the sinus in the operation of trephining for abscess, &c. of the temporo-sphenoidal lobe of the brain.

2. The following is the average condition of the sinus:—Beginning near the occipital protuberance, it ascends gradually, running forwards and upwards in close relation to the superior curved line for a short distance; leaving the curved line it continues to arch upwards until it reaches a height of nearly three-fourths of an inch above Reid's base-line; soon after it has reached this level the sinus bends gradually or sharply and runs downwards and forwards on the mastoid portion of the temporal immediately in front of a ridge which prolongs the posterior margin of the mastoid process upwards and backwards,

and in front of the posterior margin of the process itself. Here it lies about half-an-inch behind the meatus; having reached the level of about one-fourth or one-sixth of an inch below the floor of the meatus, it turns in to the base of the skull. The bend of the sinus, where it begins to arch downwards, is most commonly at a point an inch and a half behind and three-quarters of an inch above the centre of the bony meatus.

3. As a guide for avoiding the sinus in operations upon the cerebrum or cerebellum, the following method of mapping out the limits within which it may wander is suggested:—One line should be drawn convex upwards from a point half an inch above the occipital protuberance to a point an inch and a half behind and an inch and a quarter above the centre of the meatus, another line from half an inch below the occipital protuberance to the base-line an inch and a half behind the meatus. Between these two lines the sinus will be found; above or below the space included between them the operation of trephining may be practised with safety.

4. The author has also tried to arrive at some point at which the sinus may always be sought for with success, as this is required in the operation for septic thrombosis of the sinus. Although it varies so much in its course, generally at one spot it is pretty constant in its relation to the middle of the meatus. If the pin of a three-quarter inch trephine be placed at a point an inch and one-eighth behind the centre of the bony meatus and on the level of its upper border, he believes that it will expose the sinus in every case.

5. The site proposed by Barker for trephining in temporo-sphenoidal abscess—viz., an inch and a half behind and above the centre of the meatus—occasionally brings the trephine down on the upper part of the bend of the lateral sinus. The author has come to the conclusion that the safest site for trephining over the temporo-sphenoidal lobe of the brain is such that the pin of the trephine shall be at a point an inch and a quarter behind and an inch and seven-eighths—or, better still two inches—above the centre of the bony meatus,

6. In trephining over the cerebellum he recommends that the pin of the trephine should be placed one inch below Reid's base line, and two inches behind the centre of the meatus. This differs from the site proposed by Barker, one and a half inches behind the centre of the meatus, and one inch below the base line. He has found skulls in which the occipital artery would be wounded by a three-quarter inch trephine placed as Barker directs.

7. In all cases great care should be taken in boring the skull behind the ear, on account of the dangerous variations in the position of the lateral sinus; it is occasionally as little as one-twelfth of an inch from the surface; in other cases it comes within three-sixteenths less than a quarter of an inch of the back of the meatus.

8. With reference to tapping the antrum, the author has come to the conclusion that the mastoid antrum may be opened in every case, without wounding the sinus and without opening the cranial cavity, if a quarter inch drill be used and sent directly inwards, at such a point that the hole it makes shall lie as near as possible to the back of the bony meatus, and its upper border not more than one-twelfth of an inch above the level of a line prolonged backwards from the superior margin of the meatus. The instrument should not be inserted more than three-quarters of an inch at most; if it be pushed further than this distance there will be a danger, indeed, in a certain proportion of cases, almost a certainty of wounding the most external part of the labyrinth, viz., the external semicircular canal, which is in some cases not more than 17 mm. from the surface. The antrum will usually be reached at a depth of three-fifths of an inch In about 98 per cent. of cases a one-third inch drill might be used, and in a large proportion even a half-inch instrument; but since it is impossible to tell from the exterior the dangerous cases, the quarter-inch sizes should be used to secure safety in every case. The aperture may subsequently be enlarged with care if this be thought necessary.

9. The attempt to open the antrum and the cranial cavity by

one perforation, as proposed by Wheeler, will not always succeed. For if the trephine be placed in front of a vertical line, passing through the most prominent part of the mastoid process, with its lower margin on the level of the upper border of the meatus, it will be found that the roof of the antrum is occasionally so low (as a consequence of the low level of the petrous portion of the temporal bone) that the trephine opening lies above the level of the antrum. From his experience the author cannot recommend this method as a reliable means of reaching the antrum. If a three-quarter or half-inch trephine be used there must be great danger of wounding the lateral sinus, unless it be applied entirely above the level of the antrum. Under all circumstances he thinks a trephine, unless it be exceedingly small, is an objectionable instrument for tapping the antrum.

10. Finally he suggests a simple rule for avoiding the lateral sinus in this region, viz., that all deep perforations made here should be in front of a vertical line drawn a quarter of an inch behind the posterior margin of the meatus, and that they should be made with the greatest care. The author also draws attention to the importance of carefully exposing the bony guides before proceeding to operate.

On the Course of the Fibres of the Optic Nerve.—Hebold (*Neurol. Centralbl.*, 1891, s. 167).—In a case of atrophy of the papilla of the left eye the author was able to follow the course of the healthy fibres of the right optic nerve. In front of the chiasma the right optic nerve is composed of two bundles lying beside one another. At the level of the chiasma the external bundle remains in the same condition, but the internal deviates inwards and becomes flattened. As the sections approach the posterior part of the chiasma, this bundle passes progressively to the left, separating itself more and more from the external. The direct right bundle passes into the external part of the right tract, which is rounded, whilst its internal degenerated portion is flattened. The crossed bundle of the right eye passes into the internal part of the left tract, which preserves its size, whilst its external part is atrophied.

On the Nerve Plexuses of the Iris.—Boucheron (*Soc. Ophthal. de Paris*, December, 1890).—The branches of the ciliary nerves to the iris are disposed in plexuses like the other branches of the same nerves. Three chief plexuses exist in the iris, one of an annular arrangement near the periphery, which is common to the iris and the ciliary bodies, a second in the central part arranged in arches, and one near the pupil in the region of the sphincter. These plexuses are formed by nerve-branches, which cross one another and give off twigs to the secondary plexuses, which are situated between the loops of the principal plexuses. The meshes of the secondary plexuses near the sphincter are lozenge-shaped. In the remainder of the iris the nerve-filaments present a radial disposition, following the striæ of the iris. These fibres are often very long, being half the depth of the iris, and are sometimes placed close to the bundles of the dilator muscle. There are also to be observed bouquets of radially disposed fibres, which extend in every direction, and which are intermediate between the large and the small plexuses.

On the Superficial Ciliary Nerves in Man. — Boucheron (*Mem. de la Soc. de Biol.*, 1891, p. 59).—The eye in its anterior most vulnerable segment is protected by two systems of sensory networks, one interior or deep, the other external. These are the superficial ciliary nerves. These form around the anterior hemisphere, the cornea being excepted, a network of four or five anastomosing layers, each thread of which is accompanied by one or two arteries and two or three veins. From the deepest knots of the network threads are given off, which, penetrating in a corkscrew-like manner, anastomose near the episclera with the deep ciliary nerves. Towards the cornea the penetrating branches furnish myelinated twigs, which penetrate to the periphery either directly or indirectly by means
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On the Innervation of the Thenar Eminence.—Léjars (*Bull. de la Soc. Anat. de Paris*, 1890, p. 433). The author describes a hitherto unrecognised branch from the radial nerve for the partial supply of the thenar eminence. It often arises from the dorsal collateral branch of the thumb near its origin, It may be seen descending obliquely along the external border of the thenar eminence and terminating in fine twigs in front of the metacarpo-phalangeal articulation. From its internal border a series of branches are given off, which cross the eminence obliquely and supply nearly its inferior three quarters, which thus receives its innervation almost exclusively from the radial. As regards the question of the retention of the power of abduction by the thumb after injuries of the median nerve, the author states that it is easy to demonstrate that normally the abductor receives several branches from the radial, coming to it by the thenar branch. The muscular branch also supplies the antero-external part of the radio-carpal articulation. The author maintains that the abductor has a double nerve supply, but that the greater portion is derived from the radial.

On the Urinary Bladder and Urethra.—Griffiths (*Journ. of Anat. and Phys.*, Vol. xxv., p. 535). The muscular fibres of the wall of the bladder are collected into broad bands, two of which, from one to two inches in width, have an external longitudinal direction from the apex to the neck on the middle of the anterior and posterior surfaces. They are the "detrusor urinæ," and form the "external longitudinal coat." The other bands, which form the greater part of the wall, have an oblique or transverse direction, crossing over and under one another, and often changing their direction; these, unlike the former, have no special point of attachment. Each band is composed of anastomosing bundles of muscular fibres, and all the bands are connected with one another by means of intervening muscular

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On the Origin of the Vagina.—Retterer, (*Comptes Rendus de la Soc. de Biol.* 1891, p. 391). The author is led by his observations to modify the classical opinion as to the development of the vagina at the expense of the fused inferior extremities of the Müllerian ducts. According to his view, during the third and fourth months the uro-genital sinus divides, starting from the place of entrance of the Müllerian ducts, by the formation of two lateral folds, whose gradual fusion from above downwards forms the urethro-vaginal septum. This septum prolongs itself during the fifth and sixth months, to the inferior part of the bulb of the vagina, which explains the descent of the vagina and of the urethra at this date which had previously been observed but not explained. The superior portion of the vagina which corresponds to the base of the bladder and to the superior segment of the urethra, which is surrounded by a complete striated sphincter, is alone derived from the Müllerian ducts. The inferior portion, which corresponds to that segment of the urethra whose sphincter is interrupted posteriorly, is derived from the uro-genital sinus. This description permits of a more accurate homologising of the male and female urethræ. In the female the superior segment whose striated sphincter is complete, is the homologue of that portion of the male urethra which extends from the bladder to the sinus prostaticus; the middle segment, whose striated sphincter is incomplete corresponds to the membranous part; and the inferior segment which is related to the orifice of the vagina, is the homologue of that portion of the male urethra which is surrounded by the bulb and the bulbo-cavernosi muscles. It is then incorrect to represent the female genital organs as preserving throughout life their original condition. It is in the male that the uro-genital sinus remains undivided, in the female it attains by its division a higher degree of differentiation.

On Ossification of the Head of the Humerus.—Spencer, *(Jl. of Anat and Phys.* xxv., p. 552*).* A centre of ossification is not rarely met with in the head of the humerus of mature fœtuses at the time of birth. In large fœtuses (i.e. weighing seven pounds or more) the centre is commonly observed in the author's cases, in at least 22·5 per cent. This frequent occurrence in large still-born children would seem to have some medico-legal importance.

SURGERY.

BY GEORGE HEATON, F.R.C.S.

On the treatment of Psoas, Iliac and other large Tuberculous Abscesses by hot water flushing without drainage. –Arthur E. Barker (*British Medical Journal*, Feb. 7th, 1891.) The author, after commenting on the unsatisfactory results which usually follow the opening of large tuberculous abscesses, brings forward a method which, in his hands, has proved very successful. The principle of his treatment is to open the abscess, remove the pus, and then gently scrape away the lining membrane of the cavity and to thoroughly remove all debris by flushing the cavity with hot water.

The *modus operandi* is as follows: In the case of a psoas abscess an incision is made over its lowest part; through this opening a hollow gouge is passed connected with a reservoir containing hot boiled water. The water rushes through the gouge to the fundus of the cavity and in its reflux carries out the curdy material in the abscess. The walls of the abscess are gently scraped with the gouge, and the flushing is continued until the water is returned clear. Two or three ounces of fresh iodoform emulsion are finally injected into the cavity after thoroughly drying it, and the edges of the opening are closed with silk sutures. A simple dry dressing of salicylic wool is placed over all, and firm elastic pressure applied to the region of the abscess. Mere aspiration with injection of iodoform emulsion in his experience is tedious, uncertain, and only successful when the abscess-contents are very fluid. The hot boiled water is itself sterile and tends to check any oozing of blood from the abscess walls.

The Treatment of Arterio-Venous Aneurism, with two cases treated by Extirpation.—B. F. Curtis (*American Journal of Medical Science*, February, 1891.) The author gives the history and treatment of two cases of arterio-venous aneurism in the popliteal space. Each followed, after an interval, a pistol shot injury. He employed extirpation as a means of cure, in each case with a successful result. Having described his two cases, the author discusses in detail the various methods of treating such cases. His conclusions are as follows:—

Compression.—Only of use in early cases and when small superficial vessels are involved.

Hunterian ligature.—The application of a single ligature above the aneurism is generally followed by gangrene. The blood brought by the collateral circulation flowing into the veins through its communication with the artery, instead of passing into the peripheral circulation.

Double ligature of the artery above and below its communication. This method has given good results in many instances.

Ligature of both vessels close to the sac. This method has also been followed by success. It is safer at the same time to ligature both vessels on the peripheral side as well.

Incision and ligature.—Easier than simple ligature and more satisfactory.

Extirpation.—As reliable as incision and ligature. Small aneurisms can be extirpated unless important structures, such as nerves, would be jeopardised. Large aneurisms should be dissected out, if dissection prove easy, if not, incision and ligature is the best course.

Partial Excision of the Sternum for Melano-Sarcoma.—Dr. Herman Mynter, Buffalo, N.Y. (*Annals of Surgery*, February, 1891).—Dr. Mynter's patient was a woman, 20 years of age, who was admitted on November 14th, 1890, with a growth involving the sternum, reaching from the second to the fourth rib. The growth was first noticed eleven months before admission, and had steadily increased in size. Four months before admission the glands in the right axilla began to enlarge, and on admission filled the whole axilla. Two months previously those in the left axilla began to grow. The tumour was fixed to the sternum, but not adherent to the skin, and was soft and fluctuating in consistence. The supra-clavicular glands were slightly enlarged. The patient was in fair general health, and there were no symptoms of growth within the chest. On November 15th Dr. Mynter removed the growth. He dissected up a U shaped flap from over the sternum, and attempted to shell the tumour out of the bone. During this process the posterior lamina was perforated. The opening was enlarged, and the periosteum separated from its posterior surface, and the sternum removed piecemeal with pliers from the third to between the fifth and sixth ribs. About half an inch of the third, fourth, and fifth right costal cartilages were removed, and the pericardium exposed over an area of six square inches. The skin flap was afterwards brought into place, and a drainage tube inserted into the cavity thus left. The enlarged glands in the supra-clavicular regions and axillæ were then attacked and extirpated, the whole operation lasting two and a half hours. The after progress was satisfactory. The respiration was laboured and painful for some days. All the drainage tubes were removed on the fifth day, and on the tenth the wound was healed, and the patient allowed to sit up. She left the hospital on the 14th day, and ten weeks afterwards showed no signs of recurrence.

A Hundred Cases of Entire Excision of the Tongue.—Walter Whitehead (*Brit. Med. Jour.*, May 2nd, 1891).—Mr. Whitehead in 1881 described a method of excising the tongue with scissors, and he now gives an account of 100 cases in which he has excised the whole organ by this method, with his results. In the list he gives, cases are included in which severe operations in the jaws and neck were also necessary, and these necessarily raise the mortality of the series considerably; the mortality for the whole series of 101 cases being 19·21 per cent. He describes the more important details of his operation.

1. The patient should be fully under the influence of the anæsthetic during the first stage of the operation, but afterwards only partial insensibility should be maintained. 2. The mouth should be securely gagged. 3. The head should be supported in such a position as to give the best light and yet allow the blood to gravitate out of the mouth. 4. A firm ligature should be passed through the tip of the tongue. 5. The mucous membrane between the tongue and the lower jaw and the anterior pillars of the fauces are to be divided. 6. Rapid separation of the anterior portion of the tongue from the floor of the mouth, the lingual arteries being secured with pressure forceps, before division if possible. 7. Passing a ligature through the glosso-epiglottidean fold before finally separating the tongue. After removal, Mr. Whitehead cleans out the mouth with a lotion of mercuric iodide, and paints the raw surface left daily with an iodoform varnish. This varnish is made of the same constituents as Friar's balsam, substituting for the spirit used in the latter a saturated solution of iodoform in ether (containing a tenth of its weight of turpentine). He allows fluid food by the mouth from the first, only using rectal alimentation as a supplementary method of nourishment. The patients are made to sit up as much as possible and encouraged

to get up as soon as possible. He discourages the use of the ecraseur, because it leaves a bruised instead of clean cut wound, and because the surgeon cannot guide it with the same precision as scissors.

The statistics he gives afford useful information as to the predisposing and exciting causes of cancer of the tongue. Out of 104 cases a family history of cancer was obtained in six. A definite history of syphilis was present in seven cases, and a doubtful one in seven more. Sixty-one out of the 104 patients were smokers, and in most cases the cancer appeared on that side of the tongue on which the pipe was usually smoked. In 33 cases the irritation of carious and sharp teeth was given as the direct cause of the disease.

REVIEWS.

THE PRACTICE OF HYPNOTIC SUGGESTION.*

In France the term "guérisseur" is one of contempt, and though no such ill-meaning attaches among us to the Anglo-saxon equivalent "healer," there is nevertheless a wide-spread and well-founded distrust of "cures" based on any kind of general system such as hydropathy, homœopathy, gymnastics, faith, electricity, or any other means which dispenses with the careful individual study of cases and an accurate diagnosis of the nature of the disease. There appears to be a distinct antagonism between the scientific study of disease and the belief in the existence of anything like a panacea, while too often we observe that faith in treatment and clinical knowledge vary inversely. Hence it should not excite surprise that hypnotism, for which claims of the most extravagant kind have been made, and which is polluted by association with a thousand quackeries, has met and still meets with a considerable amount of prejudice in the efforts made on its behalf to obtain an impartial consideration of its claims to become a method of treatment recognised and approved by the general body of scientific practitioners of medicine.

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* The Practice of Hypnotic Suggestion: being an Elementary Handbook for the use of the Medical Profession. By Geo. C. Kingsbury, M.A., M.D. (University of Dublin). Bristol: John Wright and Co, 1891.

The book now before us is the latest appeal for such a fair hearing. Dr. Kingsbury puts forward very modest personal claims. He is comparatively a novice, but he has visited and studied at the various hypnotic clinics on the continent and has had some experience in his own practice, which qualify him sufficiently for the task he has undertaken, which is to explain to English readers the methods employed and the objects sought to be attained in the practice of hypnotism. The work is expanded by a brief historical account of the system, and a discussion of the objections which have been raised to it.

If we could quite accept Dr. Kingsbury's account of the matter we should welcome hypnotism as a greater aid to practical medicine than any that the present century has produced. According to this account, after obtaining the patient's consent to be put to sleep and secured the presence of a witness, we should place the patient in a comfortable chair with his back to the light, hold up two fingers above his forehead and tell him to look at these steadily and to think of nothing. From time to time he must be ordered to go to sleep, and at last he does so. Then it is sufficient to suggest to the victim of neuralgia or rheumatism that his pain has gone, to the sleepless that they will sleep, to the dyspeptic that he has appetite and a good digestion, in order to obtain the desired results; while similarly at our command wounds (Case 6) heal, pleurisy (Case 10) abates, eczema (p. 72) dries up, asthma ceases (Case 27), and even the thief becomes honest (Case 42), the drunkard sober (Case 47), and the violent gentle and subdued (Case 41). Moreover, it appears that ninety to ninety-five per cent. of all persons may, with their assent and co-operation, be hypnotised, though it is admitted that on the first trial the number of successes may not be more than sixty per cent. It is claimed that more than half the cases treated are greatly benefited, and that about thirty per cent are cured It is impossible for a rational person to do otherwise than suspend his belief in the presence of such a catalogue of marvels. We hope the Birmingham Committee of the British Medical Association will in due time have something to say either in confirmation or condemnation of these statements. In the meantime this book affords a very fair amount of information in a handy form to everyone who desires to learn what has been done and is doing in this matter, and it probably contains, so far as any book can supply it, the information needed to enable one to experiment for himself on suitable cases.

The text is marred by somewhat numerous orthographical and typographical errors, such as the use of capitals in a strangely liberal way (see pp. 13 and 14 Notes 1 and 7), "somnambulisme" in French being spelt without the final "e" (p. 13), Landouzy's name spelt with a "w," the name of George Stephenson, the engineer, spelt "Stevenson," and Lady Mary Wortley Montagu given a final "e." B. Franklin is spoken of as "our own great scientist." Dr. Kingsbury is an Irish graduate, but we do not believe that the Irish Graduates Association, in spite of its somewhat aggressive acquisitiveness, will support Dr. Kingsbury in this attempt to pass off Benjamin Franklin as an Irish scientist. Such errors are trifles, but they convey the impression of want of accuracy and carefulness, which in one who is making such large demands on our confidence is not so easily excused. It is possible that the passage in which Koch's "brilliant discovery" is spoken of as suffering from a temporary reaction after feverish excitement was written before the truth was known, but it serves to remind us of this gigantic bubble to which the scientific reputation of our German confrères, and of Koch in particular, lent the appearance of solidity, and which should make us receive with extreme caution such statements as those contained in this book, even though they are backed up by the names of one or two fairly well-known German and French professors. Dr. Kingsbury's criticisms of Dr. Luy's transfer methods illustrate the self-deception which plays a leading part in all "cures."

PRACTICAL INTESTINAL SURGERY.*

Dr. Robinson has made a special study of the surgery of the intestines and advocates with enthusiasm many of the most recent American innovations. He has made a large number of experiments on the intestine of the dog—in fact all his experience has been so gained. In intestinal obstruction he strongly advises the operation of anastomosis and condemns the formation of an artificial anus as leaving the patient in a loathsome condition. Senn, who first introduced anastomosis, uses plates of decalcified bone. But these are costly and difficult and tedious to prepare. As substitutes for them Dr. Robinson has devised two varieties of plates, the segmented rubber plate and the raw hide plate. These are cheap and easily and rapidly made. By numerous experiments he has satisfied himself as to their reliability in the dog, and urges that they will prove equally efficacious in the human being. He advises that the surfaces of peritoneum to be apposed and united should be scarified with a fine needle, as this ensures speedy and sound union. He speaks highly of omental grafting. In this proceeding strips of omentum are torn off and adjusted around the area of anastomosis, so as to further prevent any leaking of fluid from the intestinal canal into the peritoneum. He is a firm believer in the safety and utility of the inflation of the intestines with hydrogen gas introduced per rectum—a proceeding specially indicated in gunshot wounds of the abdomen.

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* Practical Intestinal Surgery : vol. i. (published by Davis, Detroit. 1891). By F. B. Robinson, M.D., Professor of Anatomy, Toledo Medical College, Ohio.

This method also originated with Senn, but as yet it has been but little used in this country. The subject of circular enterorrhaphy is discussed, and various methods of operating described. He is, however, strongly opposed to it, and claims that anastomosis is easier to perform and gives much better results.

It has yet to be shewn that measures which are successful in the abdomen of the dog will be equally so in the human being. Many of Dr. Robinson's results are most interesting, and his researches may doubtless be of value to the veterinary surgeon.

The book is sadly marred by its literary faults. Its diction is inelegant and frequently incorrect, it is full of grammatical errors, and has evidently been very imperfectly revised before going to press. But we must remember that it is written by a surgeon living in one of the western states of America, that the book is intended for American readers, and that it is quite the exception for American medical authors to write correct English.

INTUBATION OF THE LARYNX.*

INTUBATION in England has not come much into favour. This appears to be due to two reasons; one is that the difficulties and dangers of the operation have been unduly exaggerated; and the other, that the relief of laryngeal obstruction is largely left to the discretion of house surgeons who prefer a cutting operation, tracheotomy, to intubation, especially when the latter is but coldly received by their seniors.

Dr. Ball's compilation is a very fair exposition of intubation and of the position that the operation should take, not as a supplanter, but as a supplement to tracheotomy. The history of catheterism and intubation is traced, and a description of

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* Intubation of the Larynx. By James B. Ball, M.D., M.R.C.P. London: H. K. Lewis. (Illustrated.)

O'Dwyer's tubes with illustrations is given, and a practical description of the method of performing intubation.

Speaking of the difficulties and dangers of the operation it is pointed out that it may be attended with difficulty at its first performance but that with moderate dexterity and some practice it becomes fairly easy. The possibility of pushing down the membrane in front of the tube and so of causing asphyxia is recognised, but the accident is stated to be a rare one, and Dr. O'Dwyer and Dillon Brown had not a single death on the table in 600 cases from this cause. Extraction of the tube is regarded as more difficult than its insertion, and after two or three unsuccessful attempts at removal an anæsthetic is advised.

To meet the difficulty in swallowing which sometimes arises when the tube is *in situ*, soft solids are particularly recommended, and the placing of the patient in a horizontal position with the head dependent, or sometimes the prone position with the head inclined downwards may be best.

The author recognises that the main question is the relative mortality after the two operations of tracheotomy and intubation when performed for diphtheria. He gives statistics collected by himself, and quotes those of other compilers, and from them draws the following conclusions which appear to us to be very fair:—In the first and second years of life intubation gives better results than tracheotomy; after that the difference between the two operations, as far as statistics go, is not sufficiently marked to draw any definite conclusions therefrom.

A few pages are devoted to intubation in other forms of acute and in chronic stenosis of the larynx.

THE TREATMENT OF TYPHOID FEVER.*

THIS little brochure will do no harm by familiarising the profession, and possibly the public, with certain principles and methods of treatment of typhoid fever, which are rationally founded and also approved in great measure by experience. The central idea of Dr. Yeo's lecture is the importance of antisepsis in the treatment of typhoid fever. This is not by any means so absurd as so-called antiseptic treatment often is, as the lesion of typhoid fever probably developes in the intestine, and, to some extent, drugs administered by the mouth are capable of acting directly upon the intestinal disorder. Of late years many plans have been proposed for carrying out this principle. One of the earliest, and by no means least valuable, was the recommendation of sulphurous acid by Dr. Wilks, of Ashford, in 1870. We have used this remedy continuously since, and with certainly no harmful results. Dr. Yeo advocates chlorine water combined with quinine, made by putting thirty grains of powdered chlorate of potash into a twelve ounce bottle, with forty minims of strong hydrochloric acid, the bottle is to be corked, the gas allowed to generate, then water is to be poured in little by little and well shaken with the gas, and finally twenty-four or thirty-six grains of quinine and an ounce of syrup of orange peel are to be added; of this mixture an ounce is to be given every two, three, or four hours. In the early stage, first week, one or two full doses of calomel, five to ten grains are recommended, especially if there is constipation.

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* The Treatment of Typhoid Fever. By J. Burney Yeo, M.D., F.R.C.P. London: Cassell and Co. 1891.

Among other remedies of this class are α-naphthol and β-naphthol, salicylate of bismuth, and eucalyptus oil. We think Dr. Yeo's suggestion is preferable to any of these. Liebermeister employs iodine in solution with iodide of potassium, given every two hours, with two or three eight-grain doses of calomel in the first twenty-four hours. In some concluding remarks Dr. Yeo very properly points out the necessity of giving milk diluted and alkaline, of giving beef tea weak, not concentrated, and gives several other minor hints for which we may refer our readers to the original.

ON STERTOR, APOPLEXY, AND THE MANAGEMENT OF THE APOPLECTIC STATE.*

This book consists mainly of reprints of papers, some of them thirty years old. The author's mind has been, to use his own phrase, "always on stertor bent," and the object of his life and of this book is to preach the maxim "turn him on his side." According to Dr. Bowles, stertor is in many, if not most cases, caused by the base of the tongue falling against the posterior wall of the pharynx so as to obstruct respiration, and death is, in his opinion, caused or hastened in many cases of apoplexy and chloroform narcosis, by suffocation from this cause. He shews that when patients are turned on their sides or into a semi-prone position the stertor disappears, and if still unconscious they remain in a quiet sleep. He strongly advocates the Marshall Hall position in the treatment of the apparently drowned, and points out that the reason sheep die when cast or when being sheared is because they are suffocated when they lie on their backs. There is considerable practical utility in this teaching, and we trust the publication of this volume will lead to a wider acceptance of these general principles, with which we cordially agree. Apart from its main doctrine, there is a good deal to complain of in the book; besides such small errors as "strumpfel" for strumpel, "chirurgeril" for chirurgil, "phoryngeum" for pharyngeum, and "urine-bladder" for swim-bladder, there are several absurd statements (*e.g.* on pp. 45, 46, 49 and 68,) of cases where mucus is supposed to gravitate into the depending lung, and give rise to "dulness on percussion," which somewhat shake our faith in the author's powers of observation.

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* On Stertor, Apoplexy, and the Management of the Apoplectic State. By Robert L. Bowles, M.D., F.R.C.P. Lond. London: Baillière, Tindall and Cox. 1891.

VOCAL REINFORCEMENT.*

This small book is one of a series by the same author, who, as a teacher of singing, has devoted much attention to the physics of the voice. In the present volume voice production is considered from the mechanical, the intellectual, the æsthetic, and the practical points of view. The scope of a medical paper does not demand a full analysis of the views expressed by the author ; but we note that he adopts fully the teaching of Mr. Charles Lunn as to the functions of the ventricular bands and ventricles. The functions of the ventricular bands are held to be those of *resistance*—that is, they control the escape of air in the expiration of singing—thus leaving the vocal cords free from the disturbance of pressure exercised by the column of air upwards. At the same time, the ventricles are said to be distended with air, thus reinforcing the action of the ventricular bands and forming an elastic cushion above the cords, so that these are supported by a column of equal pressure above and below.

STAMMERING, ITS NATURE AND TREATMENT.†

The substance of this little book was contained in a paper read before a medical gathering at the Central London Throat Hospital. This was so favourably received that the author determined to publish it, and we are glad that he has done so, for it is the most intelligent study of the defects which make up stammering, and of their rational treatment, that we have read.

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* Vocal Reinforcement: a Practical Study. By Edmund J. Myer, F.S Sc. Lond. New York: American Publishing Co.

† Stammering, its Nature and Treatment. By Emil Behnke. London: T. Fisher Unwin.

Miscellany.

Dullard: "So, old man, Richly is dead at last."

Brightly: "I wonder he lived so long with all the doctors. Why, Dr. Scalpel had a hack at him, Dr. Piller had a hack at him, and a dozen others."

Dullard: "And now the undertaker has him."

Brightly: "Yes, by gum! and he's the worst. He got seven hacks and a hearse at him."—*Lowell Citizen.*

In Bad Shape.—Visitor to sick woman :—"How are you feeling this morning, Mrs. O'Toolihan?" *Mrs. O'Toolihan:* "Och, leddy, it is that bad oi am wid a complication av troubles—rheumatism, lumbago, and all; and it was only this marnin' that the doctor, Hiven rist his sowl, said there were decided symtims of convalescence."—*Bazaar.*

"Although he wishes it from birth,
And covets it through life's brief span,
Man never, never gets the earth—
It is the earth that gets the man."

The above verse adorns an undertaker's card in Nebraska.

Arizona.—*First Doctor:* "Got back already from Arizona?" *Second Doctor:* "Yes; I don't like it out there." "What's the matter?" "If you have a case of small-pox and don't report it to the Board of Health, you are fined and imprisoned; if you do, the relatives fill you full of buck-shot. It ain't a healthy country for a young doctor."—*Chicago Medical Standard.*

Mark Twain once stopped at the house of a friend who had seven children, one of whom, a boy, was at the time suffering from scurf on his head. The boy's mother was telling Twain about it, and asking him what she had better do. Twain inquired very carefully about when the scurf first appeared, what the symptoms were, and what remedies had been employed. Then, after thinking a moment, he ran his fingers through his hair, and said: "Try sandpaper."—*Med. Age.*

New Books, etc., Received.

The Ophthalmoscope, a Manual for Students. By Gustavus Hartridge, F.R.C.S. With 63 Illustrations. London: J. and A. Churchill.

On the Pathology and Treatment of Glaucoma. By Priestley Smith. With 64 Illustrations by the Author and 12 Photo-zincographs.

Differences in the Nervous Organisation of Man and Woman. By Harry Campbell, M.D. London: H. K. Lewis. 1891.

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NOVEMBER, 1891.

ORIGINAL COMMUNICATIONS.

ON VERTIGO OR GIDDINESS.

BY C. W. SUCKLING, M.D. LOND, M.R.C.P.
PROFESSOR OF MEDICINE AT QUEEN'S COLLEGE, PHYSICIAN TO THE CITY INFIRMARY, ETC.

VERTIGO (from *verto*, I turn) or giddiness is a symptom and not a disease in itself, and, like headache, it results from numerous morbid conditions. It is frequently the prominent symptom for which a patient seeks relief, and it is far more frequently due to functional disorders than to organic disease of the brain. In a condition of vertigo the patient feels uncertain as to his position with regard to surrounding objects, sometimes seeming to move himself (active vertigo), sometimes seeing objects moving round him (passive vertigo). Vertigo is constantly associated with impairment of equilibration, the patient usually falling or staggering in the direction in which there is a subjective sense of falling. Vertigo is the consciousness of disordered equilibration, the sensory aspect of defective equilibration, and produced generally by the conflict or want of harmony in the impressions derived from the senses which subserve equilibration. Equilibration is maintained by a sensori-motor mechanism, a complicated reflex process, being guided by impressions derived from the periphery that give information as to the relation of the body to surrounding objects. The senses which subserve equilibration are, in order of importance, the termination of the auditory nerves in the membranous labyrinth, especially the semicircular canals; sight and the muscular sense of the muscles of the eyeballs; touch, especially plantar touch, muscular, and possibly articular and visceral sensibility. The efferent or motor apparatus is formed by the muscles of the head, neck, spine, and lower extremities. The co-ordinating centre is situated in the middle lobe of the cerebellum. Derangement of any part of this mechanism may lead to vertigo; but the great organ of special sense for equilibration is formed by the semicircular canals. If the centripetal impressions which regulate co-ordination are imperfect, we become conscious of the effect in the centre by the sensation of vertigo, the sensation, if severe, being accompanied by an actual movement in the same direction as the sensation of movement. Vertigo is often associated with nausea, vomiting, palpitation, irregularity of the pulse, pallor, faintness, and even loss of consciousness. Vomiting nearly always accompanies intense vertigo, and is not nearly so suggestive of serious disease as it is when it accompanies headache. The occurrence of symptoms shewing disturbance in the area of the vagus nerve, which especially occur in aural vertigo, can be explained by the proximity of the vagus to the auditory nucleus in the medulla. The following classification of the various forms of vertigo, though not complete, is useful.

1. ***Aural or Labyrinthine Vertigo.***—Nasal, naso-pharyngeal.
2. ***Ocular.***
3. ***Vascular.***
4. ***Dyspeptic.***—Gastric, hepatic.
5. ***Nervous.***—Nervous exhaustion—sexual excess
   Mental apprehension
   Agoraphobia.
6. ***Epileptic.***
7. ***Due to Organic Brain Disease.***
8. ***Toxic.***—Uræmia.
   Gout.
   Alcohol.
   Tobacco.
   Specific Fevers.
   Constipation.
   Drugs—Gelsemium.
   Salicin.
   Quinine
   Amyl Nitrite.
   etc.

9. *From Reflex Irritation.*—Worms—Uterine and ovarian disturbance, etc.

1. *Aural or Labyrinthine Vertigo* (Menière's disease) is by far the most important variety. Gowers states that of 106 cases in which vertigo made the patient seek advice, in no less than 94 ear symptoms were present, though often slight; consisting sometimes solely in a little deafness on one side. In my experience cerebral anæmia and brain exhaustion are the most common causes of vertigo, but this vertigo is not nearly so severe as the aural variety, and is continuous and not paroxysmal.

Flourens in 1828 first discovered the function of the semicircular canals and shewed that animals lost their power of equilibration after section of these organs. The loss was temporary if those on one side only were divided, permanent if those of both sides were divided.

Goltz in 1870 suggested that pressure of the endolymph within the semicircular canals gives rise to sensory impressions, and that the pressure varied according to the position of the body, being influenced by gravitation.

Cyon in 1872 suggested that from the semicircular canals we derive our impressions as to the position of our heads in space, each canal being definitely related to one of the dimensions in space. He suggested that these impressions guide us in equilibration, and that failure in this is chiefly due to disorder of their function.

Crum-Brown, of Edinburgh, in 1875 published an account of his experiments, from which he concluded that the semicircular canals are paired organs, and that each canal corresponds to rotation in a single direction only.

There can be no doubt that the semicircular canals are special sensory organs subserving equilibration. While loss of the other sensory organs—such as sight, muscular and articular sensibility, and touch—may be compensated for, loss of function of the semicircular canals cannot be compensated. It is to Menière that we are indebted for the knowledge that severe paroxysmal vertigo is generally due to mischief in the labyrinth, and is not due to organic brain disease. In 1861 he shewed. that patients affected with inflammation of the labyrinth present an assemblage of symptoms previously thought to be cerebral in origin, *e.g.*, vertigo, tinnitus, deafness, often with vomiting and syncope. He found that all the symptoms disappeared after a time when permanent and complete deafness had ensued. Previously such symptoms were attributed to cerebral congestion or to stomach disorder. The pathology of the disease is by no means settled, and in some cases, where all the symptoms have been well marked, no lesion has been found in the semicircular canals after death.

Dr. Buzzard believes that the lesion of the auditory nerve is not at its peripheral termination in the labyrinth, but at its nucleus in the medulla; and he quotes a case, published by Dr. Sharkey, in which the characteristic symptoms of Menière's disease were due to the presence of an intra-cranial tumour lying against the pons and involving the auditory nerve. It is certainly difficult to understand how paroxysmal vertigo can depend upon structural disease of the semicircular canals.

Menière's disease is characterised by three symptoms:—1. Vertigo, which is severe and paroxysmal; 2. Tinnitus; 3. Deafness. In severe cases nausea, vomiting, cardialgia, pallor, perspiration, and syncope may attend an attack, and even transient loss of consciousness may occur. All the three cardinal symptoms may be paroxysmal, and the patient may be quite well in the intervals, but usually deafness and tinnitus are constant though much increased during the paroxysmal attacks. The vertigo, too, though its characteristic feature is its apoplectiform and paroxysmal nature, may be present between the attacks. It is usually very severe and alarming, the patient often falling and being injured. In some cases the patient is confined to bed for months, being unable to move his head on account of the severe giddiness induced by movement. There may be constant vertigo and vomiting for weeks, and the patient may die from exhaustion There seems to be no relation between the degree of defect in hearing power and the severity of the paroxysms of vertigo. In rare cases nystagmus and disturbance of vision attend an attack.

Paroxysmal vertigo, or Menière's disease, has many points of resemblance to paroxysmal headache or migraine. Both are most probably neuroses, both hereditary, and both occur especially in gouty subjects. Both are chronic maladies and rebellious to treatment. Menière's disease is attended with impairment of hearing, migraine, with impairment of sight which may become permanent, optic atrophy occurring especially on the side of the headache. In both Menière's disease and migraine there is a tendency to the occurrence of cerebral hæmorrhage. A paroxysm of vertigo may replace one of migraine or one of epilepsy. Epilepsy, migraine, and Menière's disease are the three paroxysmal neuroses.

Menière's disease is rare under 20, but may occur in early life. It is far more common after 40, and especially during the degenerative period of life. Among the causes may be mentioned—Exposure to cold; injuries to the head, probably causing hæmorrhage into the semicircular canals; syphilis; sudden cessation of menstruation; explosions and loud noises, especially when unexpected. It may supervene without apparent cause, coming on gradually in worried and overworked nervous subjects. The disease is common in old people, and is then probably due to degenerative changes in the membranous labyrinth. The changes discovered in the labyrinth have been acute inflammation, hæmorrhage, and suppuration.

It is important to remember that all the symptoms of Menière's disease may be brought about by the presence of wax or foreign bodies in the ears, or by the closure of the Eustachian tube, or by otitis media, or by post-nasal catarrh. Vertigo may be caused by syringing the ears. It is therefore essential in all cases to examine the external auditory meatus and the Eustachian tube and also the naso-pharynx. The occurrence of otitis media in childhood does not seem to predispose to the disease. Any general lowering of health will be a factor in the production of auditory vertigo; the resistance of the nervous centres being diminished, they more readily give way to the irritation transmitted from the ears. It is important to remember that a sudden attack of loss of consciousness preceded by vertigo may be due to Menière's disease. The patient may be unaware of his deafness, and is generally incredulous of the connection between his deafness and the attacks of vertigo. Sometimes deafness is found for the first time after a severe attack. In some cases diarrhœa occurs after an attack, and headache may be present. Menière's disease must be distinguished from epilepsy, apoplexy, and from vertigo due to dyspepsia or other causes. The conjugation of the three symptoms—vertigo which is severe and paroxysmal, with tinnitus, and deafness—is sufficient for the diagnosis. In Menière's disease indigestion is especially liable to excite an attack, which may be looked upon as being purely of dyspeptic origin; but the presence of some deafness and tinnitus usually clears up the case. The same thing is seen in cases of cerebral tumour, where the ingestion of food frequently causes vomiting, the centre being in an irritable condition. Such vomiting is apt to be taken for stomachic vomiting, and its cerebral nature overlooked. Menière's disease may be distinguished from epileptic vertigo by the presence of deafness and tinnitus in the former and by the occurrence of loss of consciousness and convulsion in the latter.

Some authorities state that an aura never occurs in Menière's disease, but the following clear case of Menière's disease with an aura came under my notice recently. A man aged 38 had been slightly deaf for years, and for three years has been subject to attacks of severe giddiness and buzzing in the ears. The attacks occur at irregular intervals and are brought on by worry or excitement, and by certain articles of food, especially stews and soups. The attacks begin with a sensation of numbness at the epigastrium which travels to the left shoulder and goes down the left arm to the hand, which becomes quite numbed; the numbness also passes down the left leg. He is often obliged to cease work for a couple of days together and take to his bed. The aura in this case can be explained by the vascular supply of the labyrinth as pointed out by Woakes. The labyrinth is supplied by the vertebral artery, the nerves of which are derived from the inferior cervical ganglion; this ganglion is intimately connected with the vagus nerve, the cardiac plexus, and the brachial plexus.

The diagnosis of Menière's disease from epileptic vertigo is not at all difficult as a rule; its distinction from dyspeptic vertigo is far more difficult. The latter may be paroxysmal and severe, but there is no deafness or tinnitus. In all cases of vertigo the hearing should be carefully tested. The ophthalmoscope is of much service in the diagnosis of tumours of the cerebellum and other parts of the encephalon which commonly cause vertigo.

The prognosis in Menière's disease as to complete recovery is bad, but most cases can be relieved and some have been cured, especially in young people. In incurable cases when complete deafness ensues the attacks cease or become very mild. Death may occur in a paroxysm apparently from cardiac inhibition, and autopsies have been made in one or two such cases disclosing nothing but disease of the semicircular canals.

Treatment of Menière's disease.—The bromides hold the first place in the treatment of this disease. Ten or twenty grains of bromide of potassium or ammonium may be given at frequent intervals during a paroxysm with great benefit; and the same drugs may be used in smaller doses in the intervals of the attacks. Hydrobromic acid is also very useful. Charcot recommended large doses of quinine. This treatment does good in some cases but more frequently fails. The following mixture consisting of quinine in small doses with hydrobromic acid frequently diminishes the frequency and severity of the attacks, especially if it be taken regularly.

℞	Acid. Hydrobrom. dil.	♏ x.
	Quininæ Sulph. ...	gr. ii.
	Syrup. Aurantii ...	ʒ ss.
	Aquam	℥ i.

Capiat ter die.

salicylate of sodium, gelsemium, chloride of ammonium, belladonna, or strychnine should each be tried in obstinate cases.

In gouty subjects bromide of lithium, in ten or fifteen grain doses, is useful; also purgatives, alkalies, and colchicum. Counter-irritation over the mastoid processes is decidedly beneficial. Iodine liniment, collodion vesicares, or ordinary blistering fluid may be used. I have seen most benefit result from blistering. Iodide of potassium with mercury should be given if there is any suspicion of syphilis being the cause. The general health must be attended to; fresh air, plain diet, and the avoidance of constipation are necessary. Any dyspepsia present must be corrected. During an attack the patient should keep in bed. I have tried galvanism without benefit. A sea voyage and change of air often do good by improving the nerve tone; the attacks are diminished in frequency and severity, the vertiginous centre being rendered more stable and less susceptible to disturbance by afferent impressions from the semicircular canals. If anæmia is present, a few grains of the ammonio-citrate of iron should be added to the medicine. Arsenic is a useful drug in Menière's disease. If there is much cardiac disturbance during an attack, belladonna or digitalis should be added; if much debility, strychnine. The ears, throat, and nose must be examined, and all peripheral irritation must be removed.

2. *Ocular Vertigo.*—Sight greatly aids equilibration. This is well seen in cases of locomotor ataxia, the inco-ordination being much increased by closure of the eyelids. Any error in the unconscious inference of the relation of the body to seen objects produces discord or disturbance of the equilibrating centre, and is felt as vertigo. Giddiness from rapid rotation, or waltz giddiness and swing giddiness, are produced mainly by the constant changing of visual impressions. In sea-sickness and swinging, visceral impressions, especially from the abdomen, aid in the production of vertigo and nausea. During the descent of the swing or of the boat a peculiar sensation is felt in the abdomen, the viscera seem to sink downwards at a slower rate than the

body and to rub against the diaphragm. Vertigo is usually present in miners' nystagmus, and is checked if the movements of the eyeballs are stopped. Nystagmus does not however always cause vertigo. Nystagmus and vertigo are merely associated in cerebellar disease.

Recent paralysis of ocular muscles is a common cause of vertigo, from erroneous projection of the image in the affected eye, and it may be obviated by closure of that eye.

Vertigo results frequently from muscular asthenopia and defective muscular sense of the eyeball muscles. Intense vertigo with sickness, diplopia, palpitation, and intense headache may result from strain of the convergent muscles of the eyes. Such cases are met with among students reading for examinations, and may be mistaken for cases of brain disease. Some error of refraction—*e.g.*, hypermetropia or astigmatism—is usually present, and proper glasses are required. In many cases anæmia is present, and iron is needed also.

Ocular vertigo is not usually severe and rarely approaches the severity which is common in the aural form; it is especially apt to occur on movement of the head. I have met with two or three cases of vertigo in clerks who have been obliged to sit before windows with pains of ribbed glass. Cliff giddiness or tower giddiness arises partly from mental and partly from visual disturbance. It is possible that alcoholic vertigo is partly ocular.

The treatment of ocular vertigo consists in the cure of the paralysis present or in the correction of errors of refraction by suitable glasses. In cases of muscular asthenopia iron and strychnine with small doses of bromide of potassium must be given. Prolonged rest from reading and a sea voyage will greatly accelerate the cure.

3. *Vertigo from disturbance in the blood supply to the brain* is of frequent occurrence; it is as a rule continuous and not paroxysmal. Cerebral anæmia and congestion are common causes of vertigo. Chlorosis is a potent cause. Vertigo is caused by loss of blood, *e. g*, from piles.

In the anæmic form the giddiness is worse when the patient is erect, and especially when he moves his head from side to side or looks upwards quickly. A continuance of the following mixture for several weeks, viz.—

℞ Ferri et Ammon. Cit. gr. x.
Liq. Strych. ... ♏ iv.
Ammon. Bromid. ... gr. v.
Aq. ... ... ℥ i. ter die

will cure these cases. Where the slightest movement brings on giddiness—this form pointing to atony of the cerebral vessels—strychnine, ergot, and iron are needed. Fresh air, rest, and good food are essential. I have several times discovered aortic regurgitation in people who have come to me for treatment on account of vertigo; this is caused by cerebral anæmia, and can be benefited by alcoholic stimulants and by rest in the recumbent position. The vertigo of syncope is of the same nature and must be treated in the same way. Vertigo from cerebral congestion may occur periodically. I recently saw a young man who had suffered from paroxysmal attacks of vertigo dating from an operation for hæmorrhoids from which he had at times for years lost blood. Vertigo from coughing or sneezing is due to cerebral congestion. Vertigo is occasionally very troublesome on lying down at night; there is generally anæmia in these cases. Iron should be given continuously and a bromide draught at bedtime. The great majority of the cases of vertigo I meet with are due to cerebral anæmia and often the result of overwork. The vertigo is continuous and not so severe as in Menière's disease but often severe enough to prevent the patient getting about.

Senile vertigo is very commonly met with in old people. The cerebral arteries are atheromatous or calcareous, and their lumen diminished, cerebral anæmia resulting. Hydrobromic acid or small doses of the bromides are useful. Handfield Jones recommends small doses of perchloride of mercury. Rest in bed is beneficial in severe cases, and alcohol is very useful. Cod liver oil is also of great value.

4. Trousseau laid great stress upon *Dyspeptic or Gastric*

Vertigo. He described cases in which severe apoplectiform attacks of vertigo occurred from dyspepsia only, and he claimed to have cured them by the use of alkalies and bitters. It is necessary to carefully exclude those cases of Menière's disease in which the ear symptoms are very slight or latent, for even in marked or undoubted cases of Menière's disease indigestible food will bring on an attack. Some authorities deny that there is such a thing as gastric vertigo, deeming all such cases to be really aural. Vertigo occurs as an idiosyncrasy in some people after eating certain articles of food, *e.g.*, shell fish, eggs, and pastry. The vertigo is very severe, and relieved by vomiting. In acute attacks of gastric vertigo an emetic should be given; alkalies, such as magnesia and soda with nux vomica, are beneficial; saline aperients are needed; small doses of perchloride of mercury have been recommended. Constipation and hepatic disorder may also cause vertigo.

5. *Nervous Vertigo* is a definite variety; it is produced by cerebral exhaustion. The following is a very typical case:—A lady, the matron of a large hospital, and with a great deal of work and responsibility, suddenly had other duties thrown upon her by the death of another important official. She soon began to complain of giddiness, and on several occasions fell down and was observed to stagger at times. When she reclined, a sensation as if the bed were sinking came on, and she was also giddy, and staggered on rising in the morning. Palpitation, insomnia, and startings on falling off to sleep were troublesome symptoms. Rest from work, change of air, alcoholic stimulants, and iron with strychnine rapidly effected a cure. In such cases the bromides must be given with care, but it is generally necessary to give a nocturnal draught.

Under this heading may be included vertigo from sexual excess and from mental causes, such as apprehension, *e.g.*, vertigo coming on in a nervous patient who is in dread of sea-sickness directly on stepping on board a ship at rest. In agoraphobia—the peculiar mental state in which there is a dread of open spaces—vertigo results from fear. Wherever there is nervous exhaustion the bromides must be given with caution. Iron, quinine, and strychnine are the drugs indicated.

6. *Epileptic Vertigo* is of frequent occurrence. Vertigo may constitute a minor attack. As a rule there is loss of consciousness, while in Menière's vertigo loss of consciousness is the exception. The patient may be deaf, and the epileptic attack may commence with noises in the ears, and in Menière's disease there may be an aura, as in the case previously quoted. The diagnosis is not always easy, and in all cases of paroxysmal vertigo the ears should be carefully examined. A continuous treatment with the mixed bromides is necessary. I recently saw a lady who for seven years had been subject to attacks of giddiness, without loss of consciousness, but with convulsion. The case was evidently epileptic in nature.

7. *Vertigo from organic disease* may result from tumours situated in any part of the encephalon, but it especially occurs in tumour or other lesion of the cerebellum and its peduncles, and of the pons. Giddiness often results from blows on the head and may continue for a long time with or without headache. Giddiness is also a frequent symptom of multiple sclerosis and it may occur in locomotor ataxy, but only when the ocular muscles are paralysed.

8. *Toxic Vertigo.*—Under this heading we may include the vertigo of *uræmia*, of *gout*—relieved or warded off by a dose of blue pill and a Seidlitz powder—*tobacco* and *alcohol.* Quinine, salicylate of sodium, gelsemium, belladonna, opium—Inhalation of nitrite of amyl.

Vertigo may be one of the first symptoms of a specific fever, or it may be a sequel especially after diphtheria and enteric fever. In the latter cases a course of iron and quinine is usually successful. Vertigo is a very common sequel to influenza and may last for months. Iron, quinine, and strychnine are the remedies.

9. *Reflex Vertigo from Worms, etc.*—In giddiness and convulsions, or other nervous disturbance in children, worms should always be suspected.

ADENOID HYPERTROPHY IN THE NASO-PHARYNX.

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THE terms "Adenoid Vegetations in the Naso-pharynx" and "Post Nasal Growths" are commonly and indiscriminately employed to designate a condition which is simply a hypertrophy of the normal adenoid or lymphatic tissue in the naso-pharynx, known as Luscha's tonsil. They are however apt to convey a wrong impression of both the clinical and pathological condition, and should be replaced by the more correct if somewhat less convenient title given above.

In my experience this hypertrophy is generally found as a soft sessile mass, the surface of which is irregular from depressions and excrescences of various shapes and sizes, extending across the upper part of the posterior wall and roof of the naso-pharynx between the orifices of the Eustachian tubes. It occasionally almost fills the naso-pharyngeal space, occluding both the posterior nares and the Eustachian orifices.

In structure it resembles the adenoid tissue of His, and consists of a network of loose connective tissue richly supplied with blood vessels, in the meshwork of which are found lymphatic follicles. According to Sajous there are also some conglomerate glands.

Czermak in 1860, and Voltolini in 1865, seem to have been the first to notice it; but Löwenberg in 1865 and 1879, and Meyer in 1868, were really the first to describe it and to direct attention to its pathological importance. In 1881, at the International Medical Congress in London, several important papers were read on the subject; and since then many communications have appeared in current medical literature generally confirming prior observations, but either advancing new theories of causation or describing new methods of treatment.

It may be said there is practical agreement that the hypertrophy essentially occurs in childhood and adolescence, and is almost equally prevalent in the two sexes. Considerable diversity of opinion however exists as to the influence or importance of most of the assigned causes, viz., heredity, scrofula, lymphatic temperament, anterior nasal stenosis, cleft palate, vaginal secretions at birth, the acute exanthemata, whooping cough, climate, nasal and naso-pharyngeal catarrh.

Heredity (including both the transmission of a special tendency to this hypertrophy, of which one or two well-marked instances have come under my notice, and the liability of children with a tubercular family history to lymphatic affections) and catarrh seem to me to be answerable for the large majority of cases, the former being the predisposing, the latter the exciting cause. This view alone will satisfactorily explain the fact that in children living in the same locality, exposed to the same climatic conditions, clothed and fed pretty much alike, one group will exhibit a marked, and another no tendency to this affection.

Of other assigned causes, "scrofula" and the vague "lymphatic temperament" practically come under the term "heredity."

Anterior nasal stenosis is considered by Dr. Greville MacDonald to be a predisposing or even an exciting cause. He points out * that in the large majority of cases there is some form of anterior nasal stenosis, and he argues that "whenever from any cause we have partial occlusion of the nasal fossæ, so long as respiration is conducted through the nose, there is of a physical necessity a diminution in the barometric pressure behind the stenosis. This inevitably results in more or less overfilling of the blood vessels, which, in its turn, leads to hypernutrition and hypertrophy." On the other hand, it must be remembered that some form of anterior nasal stenosis is extremely common, and very often present without any such hypertrophy; also that these cases chiefly abound in regions where catarrh and tubercle are very prevalent.

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* Diseases of the Nose, 1890. pp. 237, 18 et seq.

Given however a predisposition, it is probable that this hyperæmia sometimes proves an exciting cause.

Cleft palate, vaginal secretions at birth, the exanthemata, whooping cough, and especially climate, by predisposing to or causing catarrh, may all be considered indirect causes.

The symptoms depend upon the extent of the hypertrophy and the age of the patient. The following are usually noticed in children with a hypertrophy becoming extreme.

Catarrh associated with slight deafness is of frequent occurrence, and there is a collection of mucus in the oronasal region the first thing in a morning, some of which, possibly blood-tinged, may be seen upon the pillow. The voice loses its resonance, and sounds dead. Respiration is chiefly buccal and noisy during sleep. The sense of smell is diminished or lost. The face assumes an almost typical aspect, the mouth being constantly open, the cartilaginous alæ of the nose depressed, and the expression dull and stupid. The general nutrition of the body suffers from imperfect oxygenation, owing to the interference with normal respiration, and the chest is sometimes contracted and pigeon-breasted. If, as is often the case, the tonsils are also hypertrophied, this deficient oxygenation and chest deformity are intensified. If the orifices of the Eustachian tubes are occluded, or the action of the palato-tubal muscles interfered with, or if the catarrhal condition extends to the middle ear, the loss of hearing power may be considerable. The mental faculties are not infrequently impaired, the child is dull and quiet, and makes slow if any progress in education, and is often punished for inattention. This impairment or arrest of mental progress is probably chiefly due to the deafness and malnutrition, but several authorities of wide experience, and notably Guye of Amsterdam, are of opinion that the mental ineptitude or "aprosexia" is out of all proportion to the loss of hearing, and they attribute it to obstruction of the communications between the lymphatics of the dura mater and those of the mucous membrane of the nasal fossæ.

When the hypertrophy is less extensive, or the patient at or above the age of puberty, the subjective symptoms are modified, and may be altogether absent.

A few cases have been recorded in which certain reflex disturbances—convulsions, asthma, stammering and stuttering—were probably originated by this condition.

In all cases an examination should be made both of the naso-pharynx and ear. If the patient is old enough to exercise self-control a satisfactory view of the former may be obtained by posterior rhinoscopy, but in younger children it is preferable to make a digital examination. The educated finger at once ascertains not only the presence but the extent of the hypertrophy. A careful digital examination will also clear up any doubt in the diagnosis between this and other conditions which are sometimes found in this region, such as polypus, meningocele, etc. Examination of the ear usually reveals marked depression of the drum membrane, which in children is in itself almost diagnostic.

When a predisposition to this hypertrophy is known to exist, as for instance its occurrence in the older children of a family, it is certainly advisable that exciting causes should if possible be removed or their effects minimised. A cold damp neighbourhood with clay subsoil should be avoided. Precautions should be taken against catching cold, especially after the exanthemata, and catarrhal symptoms should be carefully treated. Anterior nasal stenosis, if present, should receive attention, and nasal respiration be encouraged.

These preventive measures, combined with remedial treatment, may also be adopted in cases where the symptoms are slight and when the patient is near the age of puberty; for with the enlargement of the oro-nasal cavities which takes place about that age, considerable diminution, or even disappearance, of symptoms may take place. The aim of remedial treatment is both to improve the general health and to reduce the hypertrophy by astringent or other applications. For this latter purpose I have found the following method useful. The naso-pharynx is cleansed once or twice daily with a warm weak alkaline solution, either by a post-nasal douche or by gently syringing through the inferior meati. Glycerine of tannin is then applied with a suitably curved brush passed behind the soft palate, or alum in a suitable medium is insufflated. Dr. Urban Pritchard records good results from the use of a weak solution of glycerine of tannin syringed twice a day through the inferior meati.

Complete removal by operative procedure is, in my opinion, demanded when there is (1) loss of hearing power, (2) so much interference with normal respiration as to cause deterioration of health, either from deficient oxygenation or from constant disturbance of sleep, and (3) a serious or troublesome reflex disturbance possibly excited by the hypertrophy. It is also advisable when in young children remedial treatment fails to arrest the progress of the growth, or when it cannot satisfactorily be carried out.

In children, unless there is any distinct contra-indication, chloroform should routinely be given. Properly administered, there is practically no risk; fright, struggling, and screaming are avoided; and a *complete* clearance can be ensured.

For operating, the finger nail, Carpart's artificial nail or spoon, Löwenberg's forceps or a modification thereof, Schutz's antero-posterior forceps, Hartmann's or Gottstein's curette, Meyer's ring-shaped knives, and the galvano-cautery have each their special advocates.

In children the following method will be found both rapid and satisfactory. Full anæsthesia having been produced, the head is inclined well downwards over a pillow, and the mouth kept open with a gag; the left forefinger is passed behind the palate, and the exact extent of the hypertrophy ascertained. If extensive, the greater part is rapidly removed with Walsham's modification of Löwenberg's forceps, and the remainder with Hartmann's curette, the finger nail finally smoothing down the surface and clearing away any stray fragments. If not very extensive, the curette and finger nail only are employed. The whole procedure should, at the outside, only take two or three minutes, and no further administration of chloroform should be necessary. The hæmorrhage in this position is generally free, but it usually ceases directly the head is raised. The blood escapes through the nostrils during the operation, and I have never experienced the slightest difficulty either from any passing into the larynx or from the amount lost; in fact the hæmorrhage can only be excessive when the mucous membrane is torn away, which, with ordinary care, cannot occur with the use of the curette.

In adults a similar method may be employed, or preferably the galvano-cautery may be used without anæsthesia.

After operation the patient should be kept in bed a few days to guard against taking cold, and slop diet only given. The condition of the middle ear should be carefully watched, for sometimes an otitis media is originated from the passage of blood through, or extension of inflammation along the Eustachian tube. During the first few days no local application should be made unless there is an offensive odour, when a little powdered boracic acid may occasionally be insufflated. On the third day it is generally necessary to syringe a warm weak boracic solution through the inferior meati to cleanse the nostrils and naso-pharynx from any breaking down blood-clot. Insufflation of the middle ear (if necessary) should not be practised until healing is accomplished. As the habit of buccal breathing may persist unless attention is given to it, nasal respiration should be systematically practised. Occasionally a re-education of voice and speech has to be undertaken.

The results of operative treatment are almost invariably satisfactory, and in many cases strikingly so. Not only do hearing and respiration rapidly improve but also the general health and the mental faculties. In fact there are few operations from which so much benefit can be obtained in proportion to the risk incurred.

POST-GRADUATE LECTURES ON THE PATHOLOGY OF TUBERCULOSIS.

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(*Continued from page 91.*)

GENERAL OBSERVATIONS ON THE ETIOLOGY OF PULMONARY TUBERCULOSIS.

In passing on now to the subject of tubercular pulmonary phthisis, I am conscious of entering a field of inquiry so wide and yet so thoroughly explored during the last decade by physicians, pathologists, and also by staticians, that the art and science of discovery almost seems to have been exhausted. In fact, the field seems closed to all but the therapeutist, who stands alone in possession of it, with the prospect still before him of a brilliant achievement in the discovery of some remedy, prophylactic or otherwise, that will effectually arrest the ravages of one of the direst diseases which flesh is heir to.

With regard to its pathological aspects—excepting reference to my own limited experience, which I may perhaps be allowed to add to the common stock, and to utilise in my endeavour to elucidate the subject—I cannot pretend to give you anything that is new or original in contrast to what is already known and recorded by accepted authorities on the subject; and this lecture will, therefore, consist mainly of a review of the more important facts relating to the pathology of the disease.

First of all, you will no doubt expect to hear what remarks I have to make concerning its etiology; it is unquestionably a most important part of its pathology, and a subject about which much diversity of opinion still prevails. At the same time it is a subject far too complicated and extensive in its relations to admit of anything approaching adequate treatment in the time and space I have at my disposal for this lecture, and I must therefore ask you to excuse my going into it further than touching upon the more important points connected with it.[31]

During what we might term the pre-microscopic period, when the views of Laennec and his followers held sway, a much debated point was the relationship of inflammation to the tubercular lesions in phthisis. With their leanings towards the ancient humoral pathology, they strenuously denied the participation of inflammatory processes in the production of phthisis, and though they admitted their existence, they looked upon them as incidental complications that had nothing whatever to do with the development of tubercle. As I have mentioned in a former lecture, such views were shewn by Addison and Virchow to be erroneous, and the result of imperfect methods of investigation. These two revolutionists taught that the phenomenon underlying *all* phthisical processes was essentially inflammatory in its nature, but that the inflammation was distinguished by certain peculiarities which they regarded as specific, and accordingly named it scrofulous or caseous pneumonia.[32] Niemeyer[33] attempted to simplify matters by robbing the inflammatory process of these specific characters ascribed to it by Addison and Virchow. According to Niemeyer, the consolidation and destruction of the lungs, which form the anatomical basis for consumption, are usually the products of a *simple chronic catarrhal pneumonia*, the tendency of which to terminate in caseation is to be explained partly by the chemistry of the process, and partly also by some inherent weakness of constitution in the individuals attacked. This caseation ought not to be viewed as tubercle, but rather as a preparation of the soil for its development, which, in by far the great majority of cases of tubercular phthisis, is a secondary phenomenon. Thus, the teaching of Laennec gradually fell into the background as that of Niemeyer rapidly gained many adherents.

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[31] It will be seen that the current of my thoughts is centered around the bacillary theory, which is still the burning question of the day in the etiology of the disease, and that I have not attempted to discuss some of the ordinary and well-known factors in the etiology, such as age, sex, occupation, and climateric conditions, etc.

[32] Vide references in Lecture I.

[33] "On Pulmonary Phthisis." Textbook of Practical Med., American translation.

The artificial production of tubercle in animals by Villemin and others[34] in 1865 diverted the current of thought in an entirely new direction, in which it continued to travel until the culminating point of interest in the etiology of the disease was reached by Koch's discovery of the bacillus. And this organism is still the centre of attraction around which scientific opinion has ever since been oscillating concerning its actual etiological significance and its exact relationship to tubercular disease. Koch demonstrated the constant presence of the bacillus in the sputum and in the tubercular lesions in a series of twenty-nine cases of pulmonary phthisis. Such investigations have from time to time been repeated, and Koch's results confirmed over and over again by physicians and pathologists in all parts of the world, so that nowadays in no case of phthisis is the diagnosis complete without an examination of the sputum for bacilli, in order to determine its tubercular character. Neither is the *post mortem* record of a case completed unless the pursuit of the bacillus is continued and carried to its favourite haunts in the pulmonary tissue. As one of the many in Berlin who witnessed the Koch treatment in phthisis, I have a lively recollection of the extent to which the detection of the bacillus in sputum was practised as a diagnostic procedure, and of the importance attached to it by the believers in the infective and specific nature of the tubercle and in a bacillary form of pulmonary phthisis.

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[34] References in first lecture. I should have mentioned that the supposed production of tubercle by the inoculation of animals with non-tuberculous material, and by the introduction of setons and other foreign bodies, tended to shake the conception of the specific nature of tubercle, and to favour the assumption that any form of irritant, caseous, purulent, or otherwise, was capable of originating tubercular disease. Various fallacies were subsequently proved underlying such experiments, and in the light of the tubercle bacillus, the lesions in many instances were shewn not to be tubercles, but formations allied to those of chronic pyæmia. In other cases the possibility of contamination of the material introduced with tubercle bacilli was demonstrated, and the lesions were examples of a mixed injection.

Now just as Laennec and his followers made caseous material the anatomical basis for his doctrine of the unity of phthisis, binding all forms in which the material was present under the term tubercular, so Koch and his followers assume a like position for the bacillus as the etiological factor for establishing the identity of all forms of tubercular diseases of the lungs (acute and chronic), and for the unification of tubercular disease generally. His doctrine teaches that the bacillus is the cause of the disease, whatever be its exact pathological nature and the variations in its anatomical structure.

Such views at first naturally aroused adverse criticism, and for the first year or so following their promulgation they were hotly discussed, and the "pros" and "cons" keenly argued by the bacteriologists on the one side and the pathological anatomists on the other.[35]

The literature of the subject is much too scattered and much too extensive to give even an epitome of it here, but I think I shall not be wrong in stating, after taking into consideration the relative position of opinion at the present time, that the balance has gradually increased in favour of Koch's views, and that, notwithstanding a few notable exceptions, there is a distinct majority not only supporting the view of tubercular phthisis as a specific disease, to which the bacillus stands in direct causal relationship, but even maintaining the identity of all forms of tubercular processes in the lungs on this common etiological basis. These views are now taught in some of our modern text-books on pathology (Green, Hamilton, Payne). On the other hand, in the later editions of some of our well-known text-books on medicine, where the results of clinical observation have to be compared with the hard facts of *post mortem* room experience, they are accepted with a considerable degree of reservation, particularly those relating to the identity of such affections as acute miliary tuberculosis and pulmonary phthisis (Bristowe, Roberts, Fagge).

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[35] The subjoined references will suffice to shew the differences of opinion amongst well-known authorities with respect to the significance of tubercle bacilli in the sputum and lung and also concerning the etiological identity of miliary tuberculosis and phthisis:—I. In support of Koch's views—Baumgarten Zeitschrift f. klin. Med., Bd. ix., 1885. Lehrbuch der pathol. Mycologie, 1890. Art.—Tuberculose, vol. ii. Ziegler Ueber Tuberculose und Schwindsucht. Volkmann's Samml klin. Vortrage, 151. Orth., Lehrbuch der speciallen path. Anatom., 1887. Poeten, Experiment. untersuch. über Lungen-schwindsucht und Tuberculose. Dissert. Göttingen, 1883. Die Verbreitung der Tuberculose in den Lungen. Schaeffer, Dissert. Berlin, 1884. Wesner, Deutsch, Archiv f. klin. Med., xxxiv., 1884, and Mühlert, Dissert. Göttingen, 1885; Ueber das Vorkommen von Bacillen in milliartuberculosen und phthisischen Veränderungen. Germain Sée de la phthisie bacillaire des Poumons, Eng. trans. by W. H. Weddall. Kegan Paul, Trench and Co., London, 1886. Watson Cheyne, loc. cit. Pulmonary Phthisis, by Dr. James, Edin., 1888. Ueber Tuberculose, etc., etc., by Dr. George Cornet, Leipzig, 1890. II. Against Koch's views—Arguments against the identity of miliary tuberculosis and pulmonary phthisis and in support of the view that phthisical changes are not casually dependent on baclli. Aufrecht, Pathol. Mittheil, vol ii., 1883. Virchow's later views, Arch. Bd., 1889, and Berlin klin. Wochenschrift 1883. Langerhans, Arch., Bd. 97, 1884. Gibbes and Shurly, An investigation into the Etiology of Phthisis. Part I. Reprint of Papers in the American Journal of Medical Sciences, March to August. 1890.

Amongst more recent contributions there is one by Dr. Cornet, a former pupil of Koch and a staunch supporter of his teaching, which deserves special mention.

Cornet undertook a series of exceptionally laborious investigations, which extended over several years, to determine the presence and the distribution of the tubercle bacillus outside the body in the most varied localities. He directed his attention to public places and establishments of all sorts wherever human beings congregated, particularly to hospitals, asylums, barracks, prisons; to places of amusement and public resort, such as theatres, concert-halls, restaurants; to business establishments; and, lastly, to sick rooms in private houses where patients lay ill from phthisis. In these places he collected from the walls, floors, and in hospitals and sick rooms from the bedsteads and various articles of furniture and clothing, accumulations of dust and dirt, of which he made an infusion in sterilised broth, and then injected this into guinea-pigs. Every precaution was taken to obtain young and healthy animals, and to isolate the injected ones from those for control experiments. The outcome of his observations would seem to shew that *the most dangerous focus for the spread of tubercular disease amongst human beings is man himself*, but that it is *the sputum* and *not the breath* of phthisical individuals that furnishes the bacilli. Moreover, as regards the risks of infection, everything depends on the methods adopted for disposing of the tubercular sputum. So long as it is kept in a moist condition the dangers of infection are minimal, but if it be allowed to dry and to contaminate the atmosphere in a pulverised form, the danger of infection is increased tenfold. In all public institutions where these precautions in respect to the sputum were not observed, and in the sick rooms of private houses where the habits of the patient and household were not cleanly—where, for instance, the patient spat about on the floor or into handkerchiefs, so that the sputum became dried—then the infusions of the dust, etc., collected yielded by far the most successful results in the inoculation experiments on the guinea-pigs, of which a large proportion became infected with tuberculosis.

The interest which the experiments possess in reference to the etiology of tubercular pulmonary phthisis is the support they give to the theory of its production by the inhalation of the bacilli, in which, of course, the respiratory tract plays the most important *rôle* as the channel of infection. They shew, too, that the tubercle bacillus is not "ubiquitous" within the meaning of the term as hitherto supposed. Cornet looks upon phthisis as much an infectious disease as typhus, scarlet fever, or diphtheria. He is decidedly not inclined to accept the so-called "constitutional predisposition" or "tissue proclivity" to tubercular disease as an etiological factor of much importance, though he would not deny that such a disposition might be acquired as the effects of some previous disease, or as the accompaniment of unfavourable surroundings. The reason why some are attacked with tubercular phthisis and others escape it is to be referred to the doctrine of chances, just in the same way as those who happen in warfare to become victims to the bullets of the enemy.

Baumgarten argues even more strongly against the existence of a "constitutional predisposition," which, he says, is purely a gratuitous assumption, and not based upon actual proof. According to Baumgarten *the most important factor* of all in the etiology of tubercular disease, and especially phthisis, is *hereditary transmission*, by which is implied the *transmission of the virus itself* and *not* of a "tissue predisposition" to its influence. Moreover, this transmission is effected during intra-uterine life mostly direct from the mother through the placental circulation.[36] The number of cases where the disease has been acquired by the accident of infection from without is, according to Baumgarten, comparatively small compared to the number of cases traceable to hereditary influence.

The tubercular virus thus implanted in the organism may either manifest itself in congenital disease or break out in the earlier years of life, or it may remain latent during the entire life of the individual, to become handed down to posterity and produce disease in future generations. Tubercle bacilli that have gained access either directly or indirectly into the fœtal circulation must necessarily, according to physiological laws, first become deposited in certain organs or tissues, amongst which the lymphatic glands and the bone marrow take the first place. Here they remain latent and kept in abeyance by the vital energy of the growing embryonic tissue until, under certain favourable circumstances—such as predominance in their number, or in the degree of their innate proliferative activity, the accession of such extrinsic or accidental complications as inflammations or injuries weakening the vitality of the tissue—they are able to overcome the tissue resistance and call forth tubercular disease of glands and bones.

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[36] Baumgarten refers to the experiments of Maffucci, who inoculated the eggs of fowls with the microbes of chicken cholera, anthrax, and the pneumococcus of Friedländer, and then artificially hatched them. The fate of the micro-organisms, so long as the embryos lived, was variable. Some perished owing to the resistant vital energy of the growing embryonic tissue, and in no case was there observed a growth of the microbes either in the embryonic tissue itself or in the surrounding nutritive fluid; on the other hand, some of the organisms appeared to remain in a latent virulent state, until the termination of the embryonal development, to manifest their activity during post-embryonic life, and to call forth outbreaks of the disease. Bearing, too, on the question of hereditary transmission are the observations of Johne, who demonstrated tubercle bacilli in the fœtuses of calves; of Jani and Wiegert, who found them in the vesiculæ seminales and in the seminal tubes of the testes of tubercular men, when these structures appeared to the naked eye otherwise healthy. Jani found them also in the vagina and in the Fallopian tubes of phthisical women. This is a field of inquiry still open for further investigation. Johne, Fortschritte der Medicin, 1885, No. 7. Weigert and Jani, Virch. Archiv. Bd. 103, 1886.

In this way are to be explained the instances of congenital tubercular disease occurring from the first week to the first month of extra-uterine life, as well as its later manifestations in glands, bones, and joints, which structures Baumgarten believes are more frequently the primary seats of tubercular disease than the lungs; although it must be admitted there are no positive or complete statistics shewing the relations between them in this respect.

He insists particularly on the extreme chronicity of tubercular disease, on its insidious progress, and its peculiar latent tendencies, as distinguishing features; and considers that as an hereditary affection it is analogous in every respect to syphilis, but especially in this, viz, that it is the virus itself, in the form of the bacilli or their spores, which is transmitted, and that there is no such thing as a transference of the so-called tubercular diathesis or predisposition.

Coming now to cases of tubercular disease, especially tubercular pulmonary phthisis, which owe their origin to accidental causes, such as infection from without, we have already alluded to Cornet's experiments, and will here refer to his opinions based upon them—opinions shared by many others. Cornet maintains that tubercular disease of the lungs in the form of pulmonary phthisis is for the most part a primary affection, and that it is caused by the inhalation of an atmosphere contaminated with the bacilli or their spores. Accordingly, the bronchial ramifications are the channels through which the infection takes place.

While not wishing to infer that no bacilli enter the lungs with the air-stream, or that there is no such event as an inhalation-tuberculosis in man, Baumgarten, notwithstanding the frequency with which the lungs are found to be affected, expresses himself in favour of its hæmatogenous origin in the majority of cases, effected indirectly through the lymphatics from a latent focus somewhere in the body. The only explanation he gives why the lungs are so often affected is based upon the results of his numerous inoculation experiments, which shew that, whatever the method of infection, they are pre-eminently the favourite places for the manifestation of the disease.

Against Cornet's views he advances the negative evidence from similar experimental investigations conducted by Bollinger, Celli, Gaurnieri, Mendelsohn, Pernice, and Santa Sirene. He states moreover, as the results of years of personal observation and experiment, that certain parts of the body—viz., the skin, external mucous membranes, and the lungs in particular—are peculiarly resistant to the invasion of microbes, on account of the natural protection afforded by their epithelial covering. The ciliated epithelium of the upper naso-respiratory tract is constantly engaged in casting out all kinds of foreign particles, and only injuries of a serious nature can break down its natural protective influence.

Of all the natural channels through which accidental infection may occur, the gastro-intestinal tract is the one that claims special attention, for the intestinal mucous membrane appears to be peculiarly defenceless against bacterial invasion. Still, even here, two most important points must be borne in mind as regards the effects of bacillary invasion, viz., the number of bacilli introduced and the degree of their virulence. Like other pathogenic organisms, tubercle bacilli exhibit variations in the degree of their virulence, which is attenuated by transmission through the bodies of various animal species; and hence, according to Baumgarten, the dangers arising from the consumption of tuberculous meat and milk (especially the latter) have been somewhat over-rated. No doubt cumulative effects may arise by long-continued consumption of such food; but for all that, Baumgarten is not inclined to attribute to the gastro-intestinal tract much importance as a channel of infection, on account of the ineffectiveness of the causes operating through them.[37]

So far we have examined the views of those who agree in the main principle, but differ concerning the details of its application. In other words, they all regard tuberculosis as a specific disease to be referred to the operation of a specific virus, the bacilli; but they are not agreed as to the mode and sphere of the action of the virus. Amongst those antagonistic to Koch's doctrine, two of the most uncompromising opponents are Drs. Heanage Gibbes and Shurly, whose labours are not yet completed; only the first instalment has appeared in print (*vide* under No. 35 ref.), and this seems to be mainly a critical digest of the opinions of various clinicists and pathologists on the subject up to the present time. From a perusal of it, it is quite clear that Drs. Gibbes and Shurly are not believers in the doctrine of the unity of phthisis and tuberculosis, based upon the bacillus as the etiological factor; and accordingly, from this standpoint, they cannot subscribe to the view of the specific and infective nature of tubercle. On the contrary, they maintain that the causal relationship of the bacillus to the various forms of tubercular phthisis has not yet been sufficiently established; and they incline to regard its presence in the lesions as an effect rather than as the cause. Dr. Gibbes attaches great importance to the histological analysis of tubercle as the only reliable method of determining its distinctive characters. But they inform us that *a series of experimental investigations are still in progress*, by the results of which they hope to prove the correctness of their convictions. Now herein lies, it seems to me, the weak point in their arguments. To start with a certain conviction or bias—the value of which, as scientific evidence brought forward to upset a theory, remains to be proved by experimental investigations not yet completed—is a method of procedure open at least to criticism if not to fallacy. Well may you exclaim, "When pathologists of such repute differ, who is to decide?"

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[37] Baumgarten says that a primary tuberculosis of the gastro-intestinal tract rarely occurs in man. This is not to be explained by supposing that the intestine could act as the portal for the entrance of the tubercular virus without becoming affected itself, and that the bacilli, having passed unopposed through the intestinal wall and the mesenteric glands, succeed in reaching more distant organs, where they set up changes. Such a supposition is contrary to experimental evidence, which shews that in intestinal tuberculosis the mesenteric glands are always, and it may be, extensively affected. Although primary intestinal tuberculosis is comparatively rare, tubercular disease of the mesenteric glands is of frequent occurrence in children. Vide the interesting lecture on Tuberculosis and Tabes Mesenterica, by Dr. Sims Woodhead, *Lancet*, 1888, vol. ii., pp. 51 and 99, where statistics are given. Baumgarten says the rarity of a primary tuberculosis of the gastro-intestinal tract is to be explained by the insignificance of the exciting causes.

Now in reviewing the opinions of the numerous authorities quoted, one or two points have struck me as being worthy of comment. First of all, it appears to me that the pure pathologists, especially those among our foreign brethren, shew a tendency in their observations to look at the question too much through the spectacles of experimental research ; they are inclined to appeal to experiments on animals for the explanation of many knotty points arising in the pathology of the disease as affecting human beings. The conditions modifying the disease induced in animals by direct experiment must differ materially from those influencing the disease as it occurs idiopathically in man. In the former case the experimenter has them entirely under his control, while in the latter case they have to be sought for and linked into evidence from the clinical history of the case; and, accordingly, each individual case has to be judged of according to its own peculiar merits. I do not wish it to be inferred that I am insensible of the great value and importance of experimental pathology, or of our indebtedness to it for the elucidation of many points in the pathology of diseases affecting the human race. But I have long held the opinion that pathological inquiry into human ailments coming daily under our cognisance as practitioners of our art, when divorced from clinical knowledge and experience, is, in a sense, narrow and one-sided compared with pathological inquiry in the *post mortem* room, that goes hand in hand with clinical observation. The value of this co-operation is seen in the writings of some of our own well-known pathologists,[38] and is nowhere better illustrated than in the posthumous and monumental work of one of the most brilliant clinicians and pathologists of modern times,[39] whose untimely death those who had the advantage of profiting by his teaching will never cease to lament.

As regards my own opinions concerning tuberculosis and tubercular phthisis, I am a firm believer in Koch's teaching;[40] and as one of the many who witnessed his methods of research, and, further, had the advantage of working in bacteriology in the Hygienic Institute in Berlin under the supervision of his able assistants, I could not arrive at any other conclusion, however sceptical my ideas were when I first began. Moreover, the results of Koch's researches have since received such wide confirmation by unbiassed investigators working on the same lines, that I may safely repeat the statement I made at the commencement of this lecture, when I said that, after taking into consideration the relative position of opinion at the present time, the balance has gradually and largely increased in favour of Koch's views.

But I cannot agree with Baumgarten and Cornet, who would strike out "constitutional predisposition" from the category of the etiological factors of tubercular disease in general, and pulmonary tubercular phthisis in particular, who deny or doubt its existence because they believe it does not stand the test of direct proof. Such experienced pathologists as Orth, Ziegler, Birch-Hirschfeld, and others, all of whom are believers in the pathogenic causal relationship of the tubercle bacillus, still maintain that constitutional predisposition is an important element in the etiology of tubercular disease that has to be reckoned with. Neither do I endorse Baumgarten's extraordinary views about the lungs as channels for primary infection. Both clinical experience as well as pathological examination of the numerous instances of the disease in man render it very difficult to accept the proposition that by far the greater number of cases of pulmonary tubercular phthisis are not of primary origin, but are local manifestations, secondary and traceable to some pre-existing latent focus of disease somewhere or other in the body, and consequently are the results of hæmatogenous infection. Nay, I even believe that not a few instances can be cited where the pulmonary affection at its commencement was not tubercular at all, but in all probability simply of an inflammatory nature, and that it became subsequently stamped with the tubercular characters by the lodgment of the tubercular virus conveyed through the respiratory tract. Accordingly, I consider Cornet's experimental investigations constitute an important contribution to the bacillary origin of tubercular pulmonary phthisis of much value and interest to the practical physician.

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[38] The works of Wilks and Moxon, Gull and Sutton, and others.

[39] The Principles and Practice of Medicine, by C. H. Fagge.

[40] Vide Postscript.

I must apologise for taking up so much of your attention with the subject of the etiology of tubercular disease; but I have taken the opportunity at this stage of my lectures to enter at length into the discussion of it, and to lay before you some of the most recent work done in this direction, chiefly on account of its important bearing on that form of the disease now under consideration, viz., Pulmonary Tubercular Phthisis. In my next lecture I shall turn to my own series of cases, discuss its association with and relationship to other diseases, and describe the morbid anatomy and histology of its various forms.

Postscript.—Amongst experimental researches of recent date bearing on the chemical aspects of pathological investigation, and particularly on the *modus operandi* of the Koch treatment, those of Professor Maffucci[41] are of such exceptional interest that I cannot omit a reference to them. Maffucci took pure cultures of the tubercle bacillus in solid glycerinated blood serum or in fluid blood serum from one to six months old, ***sterilised them completely***, so as to effectually destroy the vegetative vitality of the bacilli, and then injected guinea-pigs with the sterilised products

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[41] Ueber die Wirkung der reinen, sterilen Culturen des Tuberkelbacillus. Centralblt. fur allgemeine Path. u. pathologische Anat., 1890. Bd. 1, No. 26.

After a period varying from three weeks to four months following the operation, all the animals died of a febrile disorder terminating in general marasmus. Examination of the organs after death shewed marked atrophy of the cell elements, blood stasis, and in a few instances simple catarrhal inflammation, ***but without the slightest evidence of the development of tubercular lesions.***

Hence it would appear that the action of the bacilli is twofold, viz., a mechanical one producing morphological disturbances in originating certain tissue lesions; and a chemical one, arising from the metabolism between the bacilli and the tissues, and producing certain chemical substances allied to the toxalbumins, to the operation of which the leading constitutional symptoms of tubercular disease (especially phthisis) such as pyrexia, anæmia, and wasting may be referred.

The absence in these cases of tubercular lesions appears to me to afford the strongest possible evidence in favour of the bacillary theory.

The temperature employed in the operation of sterilisation was sufficient to destroy the vitality of the bacilli, but it in no way interfered with the poisonous chemical products resulting from their growth in the nutrient media.

P.S.—In preparing these lectures for the press I have come across the report of an exceedingly interesting and unique case recorded in Ziegler's Beiträge zur path. Anat. und allg. Pathol., 1891, p. 429, by Birch-Hirschfeld and Schmorl, of the direct transmission of the bacillus tuberculosis from the mother to the fœtus. This is claimed to be the first case of the kind recorded in the human race. Klebs in the last edition of his textbook on "Allgemeine Pathologie," has put forward the view of the possible infection of the fœtus in utero by its swallowing liquor amnii contaminated with tubercle bacilli.

ABSTRACT OF PAPER
ON BONY DEPOSITS IN THE SKIN.*

BY F. FAULDER WHITE, F.R.C.S.

In an extended search through a large amount of medical literature I had been unsuccessful in finding any recorded cases of a similar condition until Mr. Jonathan Hutchinson very kindly sent me an account of a case seen by him some thirty years ago. As this case is a very singular one, and as I was unable to allude to it in my paper, a brief quotation from Mr. Hutchinson's description in the *Medical Times* of 1860 will not be out of place.

"J. H., a boy of about 12 years of age.—In the left upper extremity the shoulder, wrist, and carpal joints were firmly anchylosed. The left humerus was shorter than its fellow, and running down its whole length on the outer side was an irregular ridge of bone, which projected about two inches below the end of the outer condyle. Over this ridge the skin was adherent to the bone, and was thickened and in a condition much resembling certain forms of ichthyosis. . . . In the fascia of the forearm were large plates of bone, two or three inches in length, and amongst the tendinous structures of the palm was a large nodular mass. Several small isolated deposits of bone were scattered about the fingers and beneath the skin of the back of the hand. In the right extremity the morbid conditions were not so extensive. There were nodular growths about the bones of the elbow, and large plates in the fascia above and below that joint. Some of these were easily movable from side to side, being however five or six inches long by two broad. One of them extended over the internal condyle downwards and was attached to that bone, overlapping the inner aspect of the elbow but permitting of motion. With regard to history, it was stated that the midwife who delivered his mother observed the deformities immediately after the boy's birth, and that, when three weeks old he was placed under care, on account of them, at the London Hospital."

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* Read before the Birmingham and Midland Counties Branch of the British Medical Association.

I have quoted the above because, apart from its general interest, it is, so far as I know, the only published case of isolated bony plates beneath the skin, and will serve for comparison with the case reported below. But the two cases are in many respects widely separated.

To proceed with my case.—Col. C., aged 65, met with a very severe accident in 1842. I believe it was the first great railway accident that happened at Meudon, near Paris. Col. C. was in the fifth carriage, which was thrown on the top of a pile of carriages, the two locomotives being beneath. As he was getting out through the window, legs first, a boiler burst and he was enveloped in the steam. Strange as it seems, he felt no pain at the time, but was able to drop on to the ground and thence crawl to the top of a high embankment before he discovered that the skin of his legs was almost completely destroyed. His boots however saved his feet, and a pair of stout garters preserved two circles of skin below the knees. Recovery was for a long time considered hopeless, and the process of healing occupied five years. The bone plates did not make their appearance until long after. A quarter of a century elapsed in which the cicatrices had time to wear out, as Erichsen terms it, and to all appearance the cicatrices have worn out, the new skin being generally movable over the underlying structures. During the last twenty years the development of bony masses in the deeper layers of the skin has been steadily going on. At one time a bony mass encircled the left leg like a garter. A large plate formed in each calf, and in front of the knee joint there is hardly a square inch of skin that has not been invaded by the calcifying process. From time to time removal of these plates has become necessary on account of irritation which sometimes gave rise to an acute dermatitis, more often to a sloughing ulcer. Patches of ichthyosis have gradually formed below the knees. This disease is said to be invariably associated with an excess of lime salts in the skin, and Morris says it is probably always congénital. My case would form an exception to the rule. In Mr. Hutchinson's case this peculiar condition of the skin has been already noticed.

The bone plates form part of the tissues in which they lie, and appear to have originated in an actual transformation of those tissues. They can only be separated after a careful dissection. Viewed with the naked eye they present all the characteristic features of true bone, but under the microscope one has not been able to discover any typical Haversian system. One sees instead a series of glistening homogeneous lamellæ without apparently any special arrangement of cells or vessels. On the other hand, there are none of the usual appearances of granular degeneration.

In any consideration of the nature of the calcifying process it is well to remember that the corpuscles of true bone are homologous with those of connective tissue, and that the enclosing lacunæ and canaliculi correspond to the cell spaces of that tissue. That which distinguishes true ossification from the process of calcification is the vascular proliferation accompanying the former. But the two processes are closely comparable. In both the deposition of bone salts in a connective tissue framework is the initial step, and it is probable that in both the selective powers of the connective tissue cell are in operation. It is believed by Klein that the osteoblasts are themselves calcified in the process of ossification; perhaps it would be nearer the truth to say that they calcify themselves. Quain admits that cells have been observed in the enamel organ only partially converted into a hard substance; and pathologists are agreed that in the calcification of arteries the process commences in the muscle fibre cells.

The above are some of the facts that have led one to believe that the connective tissue cell may be an important agent in the process of calcification. The selective powers of the tissue cells are now known to be very considerable. But whatever part the cells may take in the incorporation of lime salts into the tissues the deposition of such salts must be considered as an essential part of the calcifying process. The lime salts are the least soluble of those contained in the blood and in the nutrient fluids derived therefrom, and any condition that tends to delay the course of those fluids through the tissues must favour the deposition of the more insoluble salts. And there are grounds for the belief that in all cases of calcification there exists some local impediment to the circulation. Martin considered that arterial calcification was dependent upon a progressive obliteration of the smallest nutrient vessels by endarteritis, and there is no doubt that he detected obliteration of the vasa vasorum in the affected area of some calcified arteries. A condition of arterio-capillary fibrosis was believed by Gull to be usual in old age and an undoubted factor in the degenerative changes of the last period of life. Amongst these degenerative changes calcification has always been included.

It is perhaps also worthy of remark that in the process of development calcification of cartilage does not commence until, by the swelling of the cartilage cells, some increase of pressure has been occasioned in the interstitial tissue. In my case there is ample evidence of local failure of circulation. Three pairs of stockings are required in summer to maintain a proper degree of warmth in the parts, and the smallest injury invariably produces a slough.

In conclusion, let me express an opinion that failure of nutrition is not a satisfactory explanation of the calcifying process. It is not indeed any explanation, but as the conditions are sometimes associated, they have been often described as those of cause and effect. But calcification is more often a process of development, when failure of nutrition as a causative agent is out of the question. In regard to the bone plates—the subject of this paper—it may be submitted that they result from the simultaneous action of the processes of deposition and incorporation, the least soluble salts of the nutritive fluids being left by a particularly sluggish current to become subject to the selective activity of the connective tissue cell.

THE CONDITION OF THE HEART IN DEBILITY.*

(THESIS FOR THE DEGREE OF M.D.)

BY ARTHUR FOXWELL, M.A., M.D. CANTAB.,
PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

THE condition of the heart in debility is one of the *quæstiones vexatissimæ* of medicine. Thus will it probably remain for a long time to come, as the chances of *post mortem* elucidation are but rarely afforded us. Hence one reads and hears many conflicting and even contradictory statements as to the causes of functional murmurs, and, moreover, as to their very character and existence. To have given merely a brief summary of the chief theories on the subject would have taken up more time than I have at my disposal, and I have thought it wise, therefore, simply to state the views which I have myself formed after five years' special thought and investigation. To this end I have divided my thesis into two parts, in one of which I shall point out the clinical facts as they have been gathered by me, and in the other I shall give what I consider to be the true explanation of these facts. The clinical facts are these :—

1. *The apex beat* is displaced upwards and outwards, usually being in the fourth left space nearly as far out as the nipple line; it is rarely displaced downwards, and I have no record of having found it in the sixth space, though it is not seldom in the fifth, even as far out as the nipple line. Its impulse is somewhat diffused, feeble, and sudden, the feebleness not seldom rendering its localisation almost impossible without the aid of the stethoscope. But there is another very evident impulse, chiefly perceptible in the second and third left spaces, but often also noticeable in the first and fourth; it spreads from above down, and from right to left, with rapid vermicular movement; in each space it starts close against the sternum, and in the fourth is occasionally perceived to the right of this bone; in

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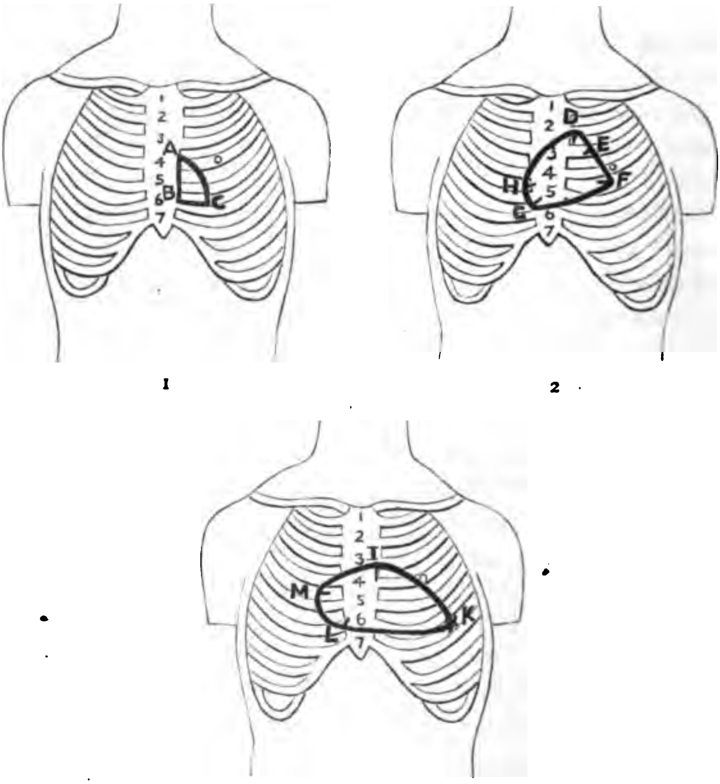
* I have chosen the word "debility," rather than anæmia, of set purpose, as quite half my cases, and many of the most marked and instructive, have occurred in broken-down subjects, who are not suffering, ner have they ever suffered, from the special blood state styled anæmia.

rhythm it is entirely systolic, or, rather, it is one continuous movement occupying the whole period of the auricular and ventricular contractions.

2. *The area of the superficial cardiac dulness* is in debility characteristic, and is the most valuable of all the signs which enable us to diagnose debility from organic disease. Taking the normal area of heart dulness to be the triangle (A, B, C, Fig. 1) made by the left edge of the sternum* from the upper border of

FIG. 1.



1

2

3

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* Most writers state that the mid-sternal line marks the right boundary of absolute cardiac dulness, but I have found it to be the left edge in at least nineteen cases out of twenty.

the fourth cartilage to the sixth, and by lines joining the extremities of this one to the apex beat in the fifth space at a point midway between the parasternal and nipple lines, then the similarly dull area in a typical debilitated heart would be an irregular figure made by joining the following points by lines slightly curved outwards (D, E, F, G, H, Fig. 1)—viz., D, at the lower border of the second left cartilage half an inch to the left of the sternum; E, a point over the third cartilage one and a half inches from the left edge of the sternum; F, the apex beat in the nipple line and fourth space; G, the right edge of the sternum at the upper border of the sixth cartilage; and H, a point in the right fourth space half an inch to the right of the sternum. If we compare this with the similarly dull area occurring in mitral regurgitation from organic disease, which has led to secondary right-sided dilatation as evidenced by tricuspid regurgitation, we find a striking difference: the irregular figure produced by a typical instance of this condition would have the following points as indices of its circumference (I, K, L, M, Fig. 1) —viz., I, the lower border of the third left cartilage at its junction with the sternum; K, the apex beat in the sixth space and anterior maxillary line; L, the sixth right cartilage at its junction with the sternum; M, in the fourth right space one and a half inches to the right of the sternum.* The three points, then, where the shape of the heart in debility differs from that of left-sided organic disease are—1. the apex beat is raised and displaced to the left, but this latter change is only slightly in excess of what is required by the arc of the circle which it traverses. 2. The proportionate extension of the dull area to the right is much less. 3. The proportionate extension upwards is much greater, this last being by far the most important of the three.

3. *Systolic murmurs are often present.*—These are produced at three points, which I state in the order of frequency, viz., the pulmonary artery, the tricuspid valve, and the mitral valve.

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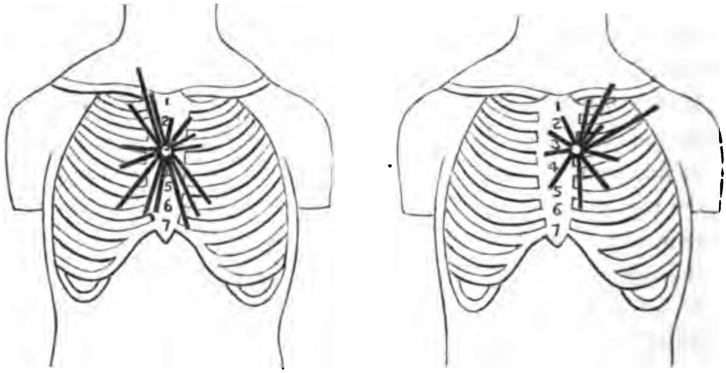
* There would also be epigastric pulsation, and the convexity of the depressed upper surface of the liver would be evident in the epigastrium.

Their rhythm is always systolic.* (1) The pulmonary murmur (Fig. 2) is heard best where the upper border of the third left cartilage joins the sternum and in the adjacent second and third spaces; it is also often conducted down to the fourth and up to the first left space near the sternum. It is seldom heard to the right of this bone or at the apex, but its line of best conduction passes up and out along the second left space towards the left shoulder. (2) The tricuspid murmur is best heard over the sternum between the third spaces, and from this spot it is

FIG. 2.



Tricuspid.
1

Pulmonary.
2

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* I have never yet been able to satisfy myself as to the necessary existence of an aortic murmur That a murmur is often loudly heard over the aortic area, and is at the same time widely distributed to the root of the neck, there can be no doubt; but I have never had any difficulty in explaining it as part of a tricuspid or pulmonary murmur according as I thought it venous or arterial. For (*a*) the right auricle not seldom occupies a portion of the second right space. (*b*) There is no valid reason for supposing that the audible vibrations of tricuspid regurgitation cannot be conducted as far as the internal jugulars. Again, (*c*) the pulmonary artery branches to the apices of both lungs, and its vibrations should be heard over these. (*d*) The pulmonary artery and aorta are two closely apposed vessels, each tensely distended with the same fluid; it is only reasonable to believe that vibrations arising in the one are transmitted to the fluid in the other. In proof of this, I might add that the murmur of aortic regurgitation is not seldom most audible over the third left space—that is, at a point where its vibrations reach the ear through the pulmonary artery.

conducted down, spreading fan like on both sides of the sternum, as low as the fifth or even sixth spaces. In the third left space it is continuous with the pulmonary murmur, to which it is nearly always secondary. It is also sometimes well conducted up to the second and first right spaces, and may even be heard in the vessels of the neck. Though often harsh, it may be very soft in character. It nearly always strikes one as being superficial, just beneath the chest piece of the stethescope, bearing some faint resemblance to the whisper in pectoriloquy. Not seldom it is absent in the erect position, but becomes distinct when the patient lies supine; in any case it becomes much more marked in this latter position. The pulmonary murmur also is often increased on assuming the supine position; but here the excess of loudness occurs chiefly in the second and third left spaces, whilst with the tricuspid the excess is most marked in the fourth and fifth spaces on both sides. In the erect position patients with tricuspid murmurs have systolic thrill or impact in their external jugulars, but when they lie down, these vessels fill from below with distinct pulsation. (3) The mitral murmur is heard best at the apex; usually it is soft and not well conducted to the axilla; it seldom replaces the first sound entirely, but either takes the place of the first half of it, or is more of the nature of an addendum to it. It is of varying intensity, and during some beats is often indistinguishable.

In the second place I would consider the causes of these abnormal facts. The chief fundamental condition is this: The left ventricle undergoes little or no enlargement. The best proof of this is the position of the apex beat; but there are other cogent reasons why this should be so. First, we must remember that debility is not a special cardiac condition. The body fails as a whole; and the heart muscle no more than other muscles, nor the heart nerves more than the nervous system generally. The whole constitutional state is below par, and every action, mental and physical, the beating of the heart included, is performed feebly; but there is no evidence to shew that the feeble left ventricle is unable to supply the diminished wants of the feebly acting body.* Secondly, should the left ventricle, from any particular cause, be unable to send on all the blood delivered to it by the right ventricle, there is no necessity here for enlargement; it may simply adjust matters by but partially emptying itself and then refusing to admit all the blood from the lungs, for the wants of the debilitated body are not imperious, and will not clamour for their due quantity of blood, but will weak-heartedly content themselves with a smaller amount, and so lead to further anæmia. The next fundamental condition is this: The right ventricle in debility nearly always becomes enlarged. The reasons for this are not far to seek. In debility, continuous work tires the body as a whole, and the heart is subject to no particular liability to fail, for the debilitated body is incapable of prolonged exertion of any kind. But the condition in *sudden* exertion is very different. In exercise, the initial strain falls on the right ventricle; the first need created is far more rapid oxidation of the blood, and the labour of producing this oxidation is the right ventricle's; should it, through debility, fail in complying with a *sudden* demand for extra labour, dyspnœa is induced, the individual abandons his task, and the rest of his body, including the left ventricle, is saved the undue strain by the failure of the right ventricle, which thus acts as a buffer to the left. Even if the *left* ventricle fails, the right again becomes the scapegoat. As we have seen, failure of the left does not necessitate its enlargement; it merely induces it to receive less blood from the left auricle, and thus increases the tension in the pulmonary circuit and the work of the right ventricle. Thus the left ventricle has no extrinsic causes for failure, while the right has two, viz., the initial strain of sudden exertion and increased pulmonary tension from weakness of the left. Both these are important and frequently occurring causes, and quite account, in my opinion, for the enlargement of the debilitated heart on the right side only.

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* It is true that when there is high tension in anæmia the left ventricle has extra work to do; but most of these high-tension anæmias are not severe ones, while in nearly all the debilities of middle life the condition is one of low tension. Moreover, if the tension is high and the ventricle too feeble to fight against it, there is no need for it to enlarge. It may content itself with a still more imperfect systole, and so still further handicap the right ventricle, both by raising the tension in the pulmonary circuit, and also by more feebly supplying the body (including the right ventricle) with arterial blood.

These statements granted, it is easy to explain (1) the position of the apex beat. The aortic valves may be regarded as the fulcrum of the heart. If the left ventricle does not enlarge, it is evident that its apex must move in the arc of a circle of which the aortic valves form the centre; that is, either down and to the right, or up and to the left. In debility the enlargement of the right ventricle naturally pushes the apex to the left, and therefore up, so as to obtain more room for its apical portion between the left ventricle and the liver. (2) The peculiar dulness is due to a dilatation of the right ventricle unaccompanied by a corresponding increase in size of the left. Hence, the right ventricle's dilatation takes place chiefly in the upward direction, as it is here freest from the restraining influence of the stout left ventricular walls. The two ventricles may be regarded as a cone, which is shewn in section at Fig. 3 If one-half of the cone be rigid (L) and the other half uniformly distensible (R), it is evident that with a uniformly distending force the chief dilatation of the distensible side will occur about

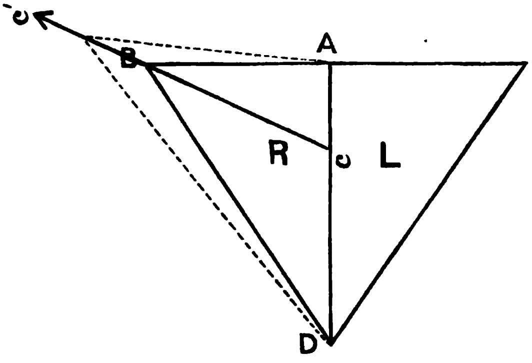

Fig. 3.

the free semicircular border of its base—will, in fact, occur along the line C C′, which bisects the angle A, B, D Such seems to me the condition of the right ventricle in debility, and this pushing upwards of the free semicircular border takes place to such an extent that the pulmonary valves are sometimes found as high as the first left space.* As we shall see directly, the pushing up of the pulmonary valves shortens the distance between the extremities of the pulmonary artery, and thus renders its dilatation easy, which may also help to explain the high range of the dulness, a range which I have occasionally found extending as far as the clavicle. (3) The murmurs: The pulmonary murmur is the result of a complicated change in the shape and position of the pulmonary artery. This change consists in (*a*) the carrying upward of the pulmonary valves till they are vertically over the bifurcation† of the artery (or even higher). This necessarily brings the valves nearer the bifurcation; for the artery may be compared to a U-tube which has its ends widely apart (*a*, Fig. 4). The change

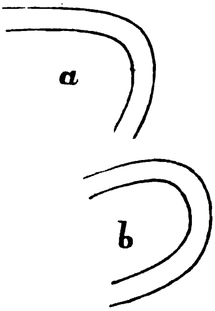

Fig. 4.

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* Vide W. Russell. Investigations into some Morbid Cardiac Conditions, p. 37, et seq. In two patients at the Queen's Hospital who died of pneumonia, and in whom there was no cardiac lesion except right-sided enlargement, I found the pulmonary valves in the one to be beneath the second left cartilage, and in the other beneath the first space.

† This bifurcation is practically a fixed point, for the descending arch of the aorta lies in its fork. To the aorta it is fastened by the ductus arteriosus; it has attachments to the pericardium, and its two branches are fixed by the roots of the lungs.

in position approximates these ends (*b*, Fig. 4), and thus obliges the curve of the artery to be the circumference of a smaller circle—in other words, sharpens the curve, and at the same time carries it higher up, and presses its superior wall against the arch of the aorta. As the tension in the aorta is so much greater and its wall so much thicker, it may be looked on as a rigid body; the pressure of the pulmonary artery against its arch will therefore flatten the superior wall of this vessel. (*b*) The plane of the right auriculo-ventricular septum ceases to lie in the same plane as the left, but becomes tilted from left to right upwards and backwards (*vide* Fig. 3), owing to the dilatation of the right ventricle.* This will prevent the axis of ventricle and artery being in the same straight line, and hence the blood during systole will impinge upon the side of the vessel. (*c*) The condition mentioned under (*b*) is still further increased by the union of the pulmonary artery to the aorta, which will not allow the posterior wall of the former to rise to anything like the same extent which the free anterior one does. (*d*) It follows from this that the anterior semicircle of the arterial coat is also more pushed up than the posterior, and must therefore become more lax, and hence an additional reason for its compression against the aortic arch. It will, moreover, assume a more or less anterior bulge or aneurysmal state, which must render the production of vibrations more easy. (*e*) The movement of the apex to the left and somewhat upwards still further alters the angle at which the ventricle lies to the pulmonary artery. This movement, of itself, when of considerable degree, is sufficient to produce a murmur, as we know from the temporary murmurs arising in left pleuritic effusion, and which vanish at once on the withdrawal of the fluid by a syringe. (*f*) Dr. Russell's theory (*loc. cit.*), that it is due to pressure by an abnormally distended left auricle, is no doubt also true, though I do not think it a main cause, nor an always present one; for I have not found evidence of an over-distended left auricle in those cases where the left ventricle was not notably enlarged. Besides, the tension in the left auricle is considerably less than in the pulmonary artery necessarily, and therefore its power of flattening this must be small. At the same time I quite agree with Dr. Russell that mitral regurgitation is by no means essential to the production of high tension in the left auricle. All that is required is that the left ventricle, from its debility, should be incapable of emptying itself during systole, and that it is so incapable we have absolute proof in the small pulse of debilitated subjects.

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* This is almost impossible to prove by direct evidence, as *post mortem* the active distension of the cavities is absent; but I have found it to be so when acting on the heart of a debilitated subject experimentally—that is, by forcing water by means of a syringe into the right ventricle, having previously tied the pulmonary artery.

The tricuspid murmur has for its causes: (*a*) The increase in the circumference of the valve ring, which is one result of the general giving way and enlargement of the right ventricle. This is more especially the case, as the valve ring is situated at a portion of the right ventricle which we have seen is liable to disproportionate stretching. (*b*) Professor Roy and Mr. Adami, in their valuable and extremely suggestive papers in the *Practitioner* for 1890, have shewn that the musculi papillares acted independently of the heart walls; further, that with high tension the contraction of the wall is somewhat delayed, whereas the papillary muscles contract as sharply as ever. When the right ventricle is dilated, one would judge that its walls similarly procrastinate their contraction; moreover, the bases of the papillary muscles are further than normal from the valve plane. If, then, these begin their contraction before the walls of the ventricle, we can easily see that at the commencement of this latter contraction the valve flaps might be too far pulled down into the cavity of the ventricle, and hence regurgitation might ensue till the ventricle had contracted sufficiently to allow the valve flaps to reattain their proper position. (*c*) There is the change in the angle of the plane of the valve to the axis of the ventricular outflow, which change, as was shewn in the case of the pulmonary valve, will tend to produce a murmur if any outflow, owing to the action of (*a*) and (*b*), take place. (*d*) Hesse and Ludwig have shewn that the circumference of the base of the heart during diastole is to its circumference during systole as 13 to 7·2. This change is due to muscular contraction. In debility it seems more than probable that this contraction is less marked; that is the auriculo-ventricular openings are less diminished in area than is the case in systole of the normal heart. Here, then, would appear to be a further cause of regurgitation.

The mitral murmur is by far the least common of the three; it is very seldom a prominent one. I think dilatation of the ventricle is rarely its cause; it certainly cannot be in that large proportion of cases of functional apical systolic murmur where the position of the apex beat is not displaced downwards or outwards. Its most frequent causes are: (*a*) Lack of due systolic contraction of the valve ring; (*b*) want of due coördination between the musculi papillares and the ventricle walls. This latter has been shewn to occur by Professor Roy and Mr. Adami with large doses of strophanthus, and they suggest that in certain diseased conditions it may also arise. This incoördination may act in two ways: it may cause regurgitation at the commencement of the systole by shortening the tendinæ before the ventricle has shortened, or by the musculi finishing their contraction too soon and lengthening when the ventricles are shortest, and so inducing regurgitation by allowing the valves to penetrate too far into the auricle. Probably this latter incoördination is the more common, for very often a short systolic apical murmur is heard following immediately the first sound and before the second.

Amongst recent writers I have been chiefly indebted to:

1. W. Russell, M.D. "Investigations into some Morbid Cardiac Conditions."
2. W. H. Broadbent, M D. "The Pulse."
3. Messrs. Roy & Adami. "Heart-beat & Pulse-wave" (*Practitioner*, 1890).
4. H. Handford, M.D. "The Condition of the Heart in Anæmia, and the Cause of the Pulmonary Murmur" (*Amer. Jour. of Med. Sciences*, Dec., 1890).
5. Herbert Davies, M.D. "The Mechanism of the Circulation through Diseased Hearts."

6. Ludwig and Hesse. "The Size of the Heart in Systole and Diastole" (Lecture on their investigation by D. Macalister, M.D., in *Brit. Med. Jour.*, Oct. 28, 1882).
7. Macdonald Brown, M.D. "The Cardiac Ventricles" (*Journal of Anat. and Phys*, Vol. 23, p. 250).
8. J. K. Fowler, M.D. "On the Origin of Anæmic Murmurs."
9. Wm. Collier, M.D. "Erasmus Wilson Lectures, 1889."

REPORTS OF CASES.

FALSE ANEURISM OF THE INTERNAL CAROTID.

Rupture of the Aneurism. Death from Hæmorrhage.

BY GEORGE HEATON, M.B., F.R.C.S.
ASSISTANT SURGEON TO THE GENERAL HOSPITAL.

Samuel S——, aged 20, was admitted into the General Hospital on July 3rd last year suffering from severe epistaxis and difficulty in swallowing. On admission he gave the following history of his illness.

On June 23rd, ten days before his admission, he had an attack of "quinsy." Two of his sisters, in the same house, were at the same time laid up with bad throats. Three days before admission he had a sudden profuse bleeding from his mouth and nose. The blood, in fact, almost choked him. The hæmorrhage ceased after his nose had been plugged. On July 2nd he had a second similar attack, and on July 3rd, at noon, just before his admission, a third. During the last two attacks blood came also from his left ear. On the day before his admission some swelling was noticed in his left parotid region, and was supposed to be an inflamed gland. Up till the present time his hearing has always been perfect in the left ear. He does not remember ever having had a "bad throat" before.

On admission the following note was taken:—Patient thin and pallid. Lips very anæmic. Pulse fairly strong. Blood is slowly trickling from the left ear and nostrils. There is a large ill-defined swelling on the left side of the face and neck; the swelling extends upwards as high as the zygoma, and backwards into the posterior triangle of the neck. The left ear is pushed outwards by the swelling, and the anterior wall of the external meatus bulges into its cavity. The skin over the swelling is inflamed; the whole swelling pulsates synchronously with the heart's beat. The mouth cannot be opened without much difficulty. The soft palate bulges forwards, especially on the left side, almost touching the root of the tongue. The left tonsil is pushed over towards the right considerably beyond the middle line. The swelling is soft and fluctuating, the mucous membrane covering it is tense and shining, and it pulsates synchronously with the swelling outside and in an expansile manner with it. No bruit or thrill can be detected in the swelling. All pulsation is arrested by pressure in the left common carotid. The left pupil is contracted, and the subcutaneous arteries, temporal and facial, of the left side of the face and scalp, are abnormally distinct.

At six p.m. that evening another hæmorrhage occurred from the nose and ear, and immediate ligature of the common carotid was decided upon. On administering chloroform the breathing, which had become very embarrassed owing to the size of the tumour in the mouth, ceased entirely. Tracheotomy was hurriedly performed by Mr. Haslam, and the patient brought round by artificial respiration.

Mr. Bartleet then proceeded to tie the common carotid artery below the omohyoid muscle. The artery was exposed and a chromicised catgut ligature tied lightly round it. The wound was closed with silver sutures and dressed with cyanide of zinc any mercury gauze. All pulsation ceased in the tumour after the ligature, the tumour shrank considerably, and in recovering from the anæsthetic the patient was very comfortable and the breathing through the tracheotomy tube quiet and easy. That evening he had a good sleep. A little blood oozed during the evening from the ear and the blood in the left nostril pulsated.

On July 4th, at 10 a.m., he had several convulsive twitchings of the right side of the face and right extremities. The tracheotomy tube was discarded as the breathing through the mouth was unimpeded. That evening he slept five and a half hours and had no more convulsions.

On July 6th after sleeping heavily all night he seemed heavy and drowsy. The wound was dressed and the stitches removed. The external swelling and that in the mouth were quite lax and painless, but blood still pulsated in the left ear. At 5.30 p.m., after an attack of coughing, he suddenly brought up large quantities of blood from the ear, nose, and mouth, and tracheotomy wound. Pressure on the carotid arteries did not arrest the hæmorrhage and he died in a few minutes.

Post mortem examination (18 hours after).—The left common carotid artery had been ligatured just above the clavicle. The ligature was in good position and the artery firmly closed with a soft clot extending up the vessel for about an inch and a half. The external carotid artery was normal. Behind the angle of the jaw the tissues around the internal carotid artery were much infiltrated with blood and the tonsillar region much broken up. The finger could be passed into the cavity of the naso-pharynx. On dissecting out the internal carotid artery, it was found to be slightly dilated just before it entered the skull, and through the internal side the artery had ruptured. The ruptured end looked somewhat acutely inflamed. The sheath also was inflamed for an inch below this. There was no evidence of any bone or ear disease. The other organs were natural.

Remarks.—The case is an extremely interesting one on account of its rarity, its very rapid progress, and the absence of any ascertainable exciting cause for the rupture of the artery. At the first glance inside his mouth it appeared to be a case of acute tonsillitis with hæmorrhage, but the dull red colour and shining tense mucous membrane of the soft palate had not the intensely red look of a quinsy, and the serious nature of the disease was at once evident on feeling the pulsating tumour outside the mouth. The internal carotid artery appeared to have given way just before it enters the skull, and the only explanation I can offer is that an abscess formed outside its walls during an attack of tonsillitis, which, instead of bursting into the naso-pharynx, made its way into the artery. A false aneurism thus formed, which eventually burst into the naso-pharynx.

PERISCOPE.

CEREBRAL AND SPINAL SURGERY.

BY GILBERT BARLING, B.S., F.R.C.S.

The American Journal of the Medical Sciences for September, 1891, contains an account of five cases of cerebral surgery by W. W. Keen, M.D.

Case 1. *Traumatic Epilepsy.*—A female, aged 39, when a child, suffered an injury to the left side of the head which rendered her unconscious for a time, but no operation was performed. The first spasm occurred soon after, another six years after, and a third five years later. Subsequently the fits occurred at intervals of a month or so. The seizures began with flexing of the fingers of the right hand, then movements of the forearm, the patient fell and lost consciousness but suffered no paralysis after, nor did she sleep. Eyes normal. 3·5 cm behind and 5 cm. above the external angular process on the left side was an abrupt bony elevation, and behind this a depression with a thickened border. The depression was exposed by a semilunar incision, and the gap was found to be covered by a thin membrane, through which the pulsations of the brain could be seen. In removing this membrane a little brain tissue was torn away with it, and some small cysts were opened. At this time it was noticed that the muscles of the left side of the face were drawn. The exposed portion of brain was concave, and was disorganised on the surface. On enlarging the opening in the bone, the pressure of the forceps caused contractions of the left face, and these were increased by touching the dura mater at a point 7·3 cm. to the left of middle line and the same distance behind the external angular process. Faradisation here and on the brain substance close to, set up movements of the right upper extremity like those in the epileptic attacks. This area of cortex was removed, and the healthy white matter exposed was stimulated with the current. The result now was only to produce contractions, which subsided as soon as stimulation ceased, and did not continue after contact ceased, as was the case before the excision. A piece of decalcified bullock tibia was used to close the gap in the skull, and was stitched to the scalp flap. The next day there was loss of flexion and extension in the right wrist and fingers, and failure of power higher up the extremity. A good recovery followed, and eight months later the report says that no fits had occurred, that the paralysed hand and arm was greatly recovered, and that the opening in the skull was closed by dense tissue, which was not however certainly bone.

Case 2. *Epilepsy following a Trauma.*—A male, aged 23, when seven years old was kicked on the head by a horse and was unconscious for a few hours. A partial trephining operation was done, and some pieces of bone, one of which penetrated the brain, were removed, but the operation was incomplete owing to the shock. Two years afterwards he had his first fit; these then became rather frequent but subsequently occurred only about once in three months. The attacks began usually with a confused feeling in the head, there was loss of consciousness, sleepiness and headache followed, but there was no part of the body first or chiefly attacked. In the right parietal region a scar existed, with a depressed but firm base and without pulsation.

Exploration was made by a semi-lunar incision, and, in loosening the flap from the margin of the defect, cerebro-spinal fluid escaped in some quantity. The margins of the bone were greatly thickened and the brain was adherent to the membrane filling the depression. The thickened margin was removed with forceps until the opening measured 5 cm. by 2·8 cm.; no dura mater was seen in this area, and as the brain matter appeared healthy none of it was removed. Faradisation of the brain with a current strong enough to move the operator's own muscles produced no effect whatever. The gap in the cranium was filled by a piece of bone just removed from the skull of a young sheep. This was stitched to the scalp flap and at its edges horse-hair drains found exit for any fluids inside the cranial cavity. One severe fit occurred on the night of the operation and a slighter one ten days later, and a third at the end of five months, when the remnant of the sheep's bone was removed, as a sinus led down to it. This piece of bone was bare and white and reduced in size from 2 by 1⅛ inch to about half an inch in either diameter.

Remarking upon these cases Dr. Keen draws attention to the possibility of preventing such conditions as these two patients exhibited by proper surgical interference at the time of the traumatism. He advocates the careful removal of lacerated brain tissue and dura mater, the latter being replaced by a flap of pericranium taken from the scalp flap and turned with its osteogenetic surface upwards, and retained in place with a few sutures. He raises the question whether the faradic current can determine that brain tissue which to the eye and touch appears normal is really diseased or not, and draws attention to the fact that in Case 1 the application of the current to the diseased area produced a typical epileptic fit.

Case 3. *Trephining for Delusional Insanity following Trauma; temporary improvement.*—A man, aged 44, injured his head by a fall from a horse. No immediate symptoms followed, but after a time the patient began to hear imaginary voices. After another head injury he had some delusions as to hearing, and later attempted suicide. At the time of operation he complained of constant headache, especially in the right parietal region at a cicatrix over a depression in the bone, and he had delusions. The right hand was rather weak, and shewed tremor on exertion. At the operation the scalp was adherent to the skull under the cicatrix, but the bone was not perforated. After removal of a disc of bone, the dura appeared normal, and the brain also when the dura was incised. This membrane was therefore sutured, and the flap of scalp also. An excellent recovery followed, the pain in the head was very much less, and all delusions disappeared. Six weeks afterwards he was reported in very good condition, much more rational than he had been, and able to do some light work. Five months later, however, it is to be feared that his mental condition was as bad as ever.

Case 4. *Cerebral Tumour; trephining; death.*—A male, aged 56, ten months before admission suffered pain over the eyes, especially on the right side. Four months later he suffered from nausea and vomiting with intense headache. Attacks of this kind recurred, and to them were added aphasia with giddiness and headache, and his memory and vision began to fail. The right arm and leg became slightly paralysed, and later there was some jerking of the right arm when it was used. When admitted, there was coarse rapid tremor of the hands and arms when used, both knee jerks (especially the right) exaggerated, ankle clonus on both sides (especially the right), intellect sluggish, no alteration of hearing, taste, or smell. Objects shewn to him were wrongly named, there was double optic neuritis and right lateral hemianopsia, but there was no paralysis of external eye muscles. Diagnosis: Cerebral tumour in the parieto-occipital lobe, and most likely in the angular and supra-marginal gyri, with pressure on the cuneus. Operation: A one and a half-inch button of bone was removed at a point half an inch behind the left parieto-occipital fissure and an inch and a quarter to the left of the middle line. The dura bulged perceptibly and did not pulsate; it gave a sensation of hardness and tenseness below it. On incising the dura, the brain substance bulged markedly out. An incision made in the brain substance led the finger to an elastic, smooth, hard body about two inches and a half below the surface. Part of this mass was removed with a hard spoon; but it was decided that, on account of its size, depth, and the patient's condition, it could not be entirely removed. The wound was therefore closed, and the patient died fourteen hours afterwards. At the autopsy the tumour was determined to be an infiltrating glioma, situated two inches from the end of the occipital lobe, one inch from the middle line, and involving the point of the cuneus.

Case 5.—*Trephining for Defective Development: Death from hæmorrhage and shock.*—A female aged 18 years had the following history:—As a baby learnt to walk and speak late; had numerous convulsions during dentition; at three years of age had *petit mal*, the attacks being repeated at intervals. At four it was noticed that she had right facial paralysis with wasting, and paralysis of the right arm and leg. The intellect later became more and more defective, the right knee jerk was much exaggerated, and there was slight ankle clonus on this side, and sensation on the right side was blunted. The head was unsymmetrical, the left side being considerably the smaller. Against his own judgment Dr. Keen was persuaded to operate. A button of bone one and a half inches in diameter was removed from the left side, three-quarters of an inch from the median line, the bone being very thick. The dura was incised, and in doing this a large vein was opened from which four to six ounces of blood was lost. No very definite lesion was found in the brain substance, and while it was being examined a second hæmorrhage of five or six ounces took place from the above-mentioned vein, and the patient became collapsed, dying about twenty minutes later despite every effort to restore her. At the autopsy the left hemisphere was much less than the right, the convolutions atrophied and the fissures irregular.

Hydro-encephalocele.—In the *Bull. et Mémoires de la Soc de Chirurgie* for June, 1891, is the record by Dr. Picqué of a large hydro-encephalocele treated by excision, the patient recovering well. The subject, an infant 15 days old, was the first child of a healthy young woman. At birth it had a tumour connected with the occipital region as large as the rest of the head; this did not increase, but when the child came to the hospital there was a large slough on the lower part of the tumour. The mother stated that the child was always in a curious somnolent condition, never crying, taking nourishment badly, and wasting considerably. The tumour, the size of a fœtal head at term, had a base about 7 to 8 cm. in diameter, occupying the middle and inferior portions of the occiput; the skin on its surface was glabrous, very thin, not transparent, presenting no cicatricial point but a large zone of violet red slough inferiorly. There was fluctuation everywhere, but the tumour was not reducible, nor was there either pulsation or impulse, and compression did not increase the somnolent condition of the patient. The head was small in all its dimensions and was so flattened in front as to resemble a toad's head. The presence of the slough determined operation although it was uncertain whether a meningocele or a meningo-encephalocele had to be dealt with.

Without the administration of an anæsthetic, an incision was made over the most prominent part of the tumour. This gave exit to a considerable quantity of bloody fluid, but the tumour remained of considerable size and tenseness. The cavity was lined with greyish material, evidently cerebral substance; the walls could be differentiated into skin, dura mater, pia mater, and a layer of grey matter 6 mm. to 8 mm. thick; no orifice was found at the pedicle. The brain matter was found attached to the occipital lobe, and just below it was a small mass evidently connected with the cerebellum, which was also emptied of some fluid. Reduction being impossible, the brain matter was removed, vessels being closed with catgut and thermocautery. The dura mater was excised, and closed with catgut sutures over the pedicle, and the skin, when resected, was also similarly closed. The loss of blood was considerable, and the infant was a good deal collapsed; but it made a good recovery, and the wound was soundly healed in three weeks. At this time the child was plump and of a good colour, its movements were active, it slept, and appeared more sensitive to outside objects.

In the same number the excision of a large spina bifida is related The patient, 12 days old, when first seen had a swelling, 8 cm. in length by 6 cm. across, occupying the whole of the lumbar region of the spine and the upper part of the sacral. At the border of the upper end was a patch about 3 cm. in diameter deprived of skin, red and irregular, and looking like a cicatrising wound. The tumour was sessile, and no orifice leading into the bony canal could be felt. When the child cried, the swelling tended to increase; but it was not reducible by pressure, nor did this excite any appreciable phenomena. There was no hydrocephalus nor any paralysis of the lower extremities. At the operation, the opening in the bones was found to involve all the lumbar and part of the sacral column The tumour appears to have been a simple meningocele, cut off from communication with the vertebral canal by a strong and resisting membrane. A good recovery followed, and for a time the child remained well, but later it presented two important phenomena—(1) hydrocephalus and (2) total paraplegia.

THE SURGERY OF THE RECTUM.

BY F. MARSH, F.R.C.S.

Excision of the Rectum by the Sacral Method (Kraske's).—The *Bulletins et Mémoires de la Société de Chirurgie de Paris*, 1891, Vol. xvii., p. 125, contain a lengthy communication from M. Richelot on this method. He thus succinctly describes the salient points of the operation :—

"The incision commences in the middle line beneath the coccyx, and terminates about the centre of the sacrum, inclining slightly to the left. Enucleate the coccyx; remove with cutting pliers a fragment of the left side of the sacrum, at first very little, subsequently enlarging the breach if you want more space. . . . Then, through the cellular tissue, go straight to the rectum, tying the vessels, which are numerous and somewhat troublesome. The tumour is explored through the rectal wall, its limits ascertained with the finger; the intestine opened; all the diseased parts are removed by fragments, separated with care from the prostate or vaginal wall, followed up, resected in totality; hæmostasis is easy and complete; the peritoneum is spared, opened by misadventure or designedly, then closed by some points of suture; finally, the superior end of the intestine is brought down, sutured to the inferior, and the wound reunited with or without drainage. The operation is one of minutiæ, and lasts commonly two hours, but it offers as much precision as can be desired."

He claims that by it the surgeon is able—

1. "To dissect out methodically cancers situated very high, preserving the region of the sphincter.

2. "To remove completely cancers clearly circumscribed, but which would be inoperable upon by other methods, their upper limit being out of reach of the knife.

3. "To preserve, whole or in part, the external sphincter, even when the rectal wall is invaded to its lower end.

4. "To avoid the formation of a 'cloaca' in cancer of the recto-vaginal wall.

5. "To attack recurrences as yet limited, and to give the patients a last chance of safety.

6. "Finally, to render easier and more precise the excision of syphilitic strictures."

In support of these statements he relates five cases in which he had performed the operation.

1. A man æt. 68, carcinoma (annular) in upper half; recovery, but local recurrence.

2. A woman æt. 50, carcinoma of recto-vaginal wall, upper limit out of reach; recovery; no recurrence after eight months.

3. A man æt. 58, emphysematous; carcinoma in lower half, involving whole circumference; death forty-eight hours afterwards from pulmonary congestion.

4. A man æt. 38, carcinoma; recurrence after excision; formation of artificial anus below sacrum; local recurrence (?)

5. A woman æt. (?), syphilitic stricture; recovery; complete cure.

In the discussion which followed, two similar operations for carcinoma were referred to by M. Routier, both women. One was well a year afterwards, but the other had local recurrence within a short period. M. Quénu also related a case of syphilitic stricture operated upon by him, and the result eight months afterwards was extremely satisfactory.

In the carcinoma series the results therefore shew:—Two probable cures, two of rapid local recurrence, one doubtful, and one death; encouraging as regards the lower rate of mortality, but not as regards the question of recurrence. On the other hand, the cases of syphilitic stricture—the first recorded thus operated upon—were eminently successful

Dr. L. Rehn, Frankfurt, A.M. (*Beilage z. Centblt. f. Chir.*, *Annals of Surgery*, Vol. xii., p. 375), thinks that the mortality is much greater than published statistics would lead us to believe. Three of his first five cases terminated fatally. The dangers of the operation are collapse and infection from fæces, the circular suture which closes the rectum giving way. Two modifications are proposed by him.

1. After an incision over left side of sacrum, to transversely divide the sacrum between the third and fourth openings and to open the flap of bone and soft parts to the right.

2. To delay closing the rectum by circular suture for ten days, thereby greatly diminishing the risk of infection.

At the International Congress at Berlin (*The Lancet*, 1891, Vol. i., p. 218), Axel Iversen, Copenhagen, gave statistics of nineteen cases of carcinoma operated on after this method. Eight terminated fatally, five from collapse. He concludes that the method is very dangerous when cancer is far advanced.

König, Gottingen, did not deem the method so dangerous, as he had only lost four out of sixteen patients; and latterly his mortality had dropped to twelve per cent., due, he thinks, to the fact that he has given up uniting the divided gut to the skin.

Czerny, Heidelberg, reported eighteen operations with four deaths. In all the fatal cases the peritoneum was opened. He advises immediate suture when this occurs. His experience goes to prove that a better prognosis as regards recurrence is afforded by a carcinoma which affects the upper parts of the rectum One of his cases lived twelve years; the cancer was situated 12 cm. from the anus. The best prognosis obtains in cases of carcinoma of the mucous membrane, which infects the glands late, and in cases of scirrhus stricture, which induces pain early.

REVIEWS.

GOLDEN RULES OF SURGICAL PRACTICE.*

THIS tiny book, the most concentrated of its kind that we have seen, is a compilation of aphorisms pointing out what should or should not be done in a great variety of circumstances of injury and disease. These aphorisms are arranged under headings, some of which refer to regions, as Abdomen, Mouth, Throat; others to diseased conditions, as Abscess and Hernia. On the whole, they are valuable guides for the men for whom they are written, although, owing to their triteness, they may occasionally be misunderstood. In another edition there will doubtless be some pruning done and some additions made; for instance, the advice, "Never pass a urethral instrument upon a man without having first passed one on yourself," might well be omitted; and, as an insertion, we should like to see stress laid upon the use of the indiarubber catheter in retention of urine where no stricture exists.

From its size, its attractive appearance, and its utility, this should be a popular dressers' book.

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* Golden Rules of Surgical Practice for the Use of Dressers and Junior House Surgeons. By a Hospital Surgeon. Bristol: John Wright and Co.

New Inventions, Drugs, etc.

WOVEN WIRE SANITARY PILLOW.—A new patent woven wire sanitary pillow has been devised by Mr. J. Nelson, of Holme-next-the-Sea, King's Lynn. It is made in the same shape as an ordinary pillow, and is much cheaper than pillows of equal size. Being made of spiral woven wire, it is easy and comfortable; and each coil consists of a separate spring, the coils being united to each other and quite different from merely plaited or braided wire. The maker states that it is the only pillow that is always cool. A constant current of air is always circulating through the pillows, and keeps them sanitary and cool. The pillow can be made extra soft and quite a luxury if a down quilted cover is placed around it before the pillow slip is put on. They do not require airing, as the wire will not absorb moisture, nor do they require beating and making up. Feather pillows get hard, lumpy, and require turning over. Water and air pillows are more or less uncomfortable, as they fit close to the part where the head touches the surface, in the same way as a plaister, and sometimes have the same effect. They are costly, and soon become useless. These disadvantages are absent from the woven wire sanitary pillow, which should be covered in thick cotton swansdown or other suitable material. It will, we believe, be warmly welcomed, and will be found invaluable for use in hospitals, hotels, private houses, etc.

TABLOIDS OF COMPRESSED CASCARA SAGRADA.—While it is well known that there is much difference in the effect produced by Cascara Sagrada upon different persons, this difference would appear attributable in a measure to differences in the products used. Examination of various preparations of Cascara Sagrada in the market reveals that they vary greatly in strength. Recently, a report published in America shewed that in 58 cases of constipation the drug was efficient in 44, and that it was found desirable to diminish rather than increase the dose with the lapse of time. A drug which has undoubtedly proved beneficial in a most perplexing class of cases should certainly be at least reliable. Messrs. Burroughs, Wellcome and Co. have submitted for examination an active preparation of Cascara in the form of tabloids. These are coated with pure sugar, and hence not disagreeable to take. They do not roll about the mouth, but being compressed in lenticular form, are more easily swallowed than round pills. Furthermore, they are free from the drawbacks of the bulky liquid preparations, and can be carried in the pocket by patients The usual dose of the Cascara Sagrada Tabloids is one or two at bed-time, or one after each meal. They are admirably suited for continuous gentle medication, and are soluble. Each tabloid contains two grains of dry extract of Cascara, prepared from selected and seasoned bark.

DERMATOL.—Dermatol, which is extensively employed both in Germany and France in dermatological practice as a general substitute for iodoform, is chemically a subgallate of bismuth. This substance has been investigated by Dr. Glaeser, Assistant Physician at the University Gynæcological Clinic, Breslau. It will be seen to have a similar yellow colour to iodoform, is insoluble in water, and is very stable and quite odourless. Applied to small external wounds, raw surfaces, and in fresh laparotomy wounds, the removal of the dressing shews practically no secretion and no irritation. In extensive tissue necrosis and granulating wounds the effects are good. For certain slight skin affections, excoriations, intertrigo, slight moist eczema, Dermatol is not used alone, but preferably in combination with an inert powder, such as starch; or, as an ointment, one part Dermatol, one part vaseline, and eight parts lanoline.

CAFFYN'S MALTO-CARNIS.—We have already described the results of our analysis of Liq. Carnis on a former occasion, and we have only to state of the preparation now before us that it consists of a mixture of liq. carnis, malt extract, and cocoa, something resembling in its nutritive value the meat peptone-chocolate so popular in Germany. It will doubtless have a large sale and be much appreciated by those in search of dietetic novelties for invalids.

Miscellany.

WHAT WE ARE HERE FOR.

Once as I walked upon the street,
A wrathful wight I chanced to meet,
Who beat his fists and loudly swore—
'Twas plain to see that he was sore.
I then did ask that man of sin,
What in creation ailed him,
That he should rave and tear his hair,
And stamp and kick and loudly swear.

A paper then he shook at me,
A form you've seen quite frequently ;
A statement huge of monthly dues
(No wonder that the man had blues).
The bill was one I'd sent to him,
In hopes that he might yield the tin,
Or me invite to share his crop
(This scheme would fit me like a top).

"Oh cheeky man!" he loudly said,
"I'm tempted quite to punch your head,
As a reward for your great gall,
I'll never pay your bill at all,
Thy monthly dun, oh man of pills!
My chivalric soul with anger thrills ;
Thy dopes are gone, I need them not,
Thy puke and purge alike forgot.
Thy capsules, tough, long passed through me,
For powders foul no use I see.
I took them once, alas! 'tis true,
But I have now no use for you."

I mildly took this vile abuse,
And leaving him did sadly muse
Upon our most unhappy lot,
Who bonds and gold galore have not.
'Twas ever thus since earth began,
That patient doth the doctor damn.
Unhappy cuss who seeks his fee
For work he's done so frequently,
Mid kicking hard and great turmoil,
That my hot blood doth fume and boil..

The doctor meek, unlike the worm,
Doth ne'er upon his debtors turn,
But plods along both night and day,
And constantly doth watch and pray
For better times that—never come,
E'en when his youth and strength are gone.
But when, like dog, he's had his day,
And his poor soul hath passed away,
His pitying friends on kindness bent,
May buy for him a monument.

And doctors young and doctors old.
Tho' sore thy need of sordid gold,
Remember when you're feeling blue
The great reward in store for you ;
The vision may thy mind give ease,
The dread of death, perchance, appease.
Some medic friend in tearful mood,
May tell the world how very good
The dear departed doctor was,
And thus win for himself applause.

And so you see, there is, indeed,
No cause to worry o'er the need,
When thou hast left this world of strife,
Of food for child, or dress for wife.
Oh, friendly taffy is so sweet,
'Tis clothes to wear and grub to eat.
And when old Gabe doth stir thy bones,
More potent than a thousand tomes,
Thou'lt find spread open at thy feet
Fulsome praise and phrases neat,
To sooth thy resurrected soul,
More cheering than the flowing bowl.
Thy name in colors bright thou'lt see
That endureth to eternity :
For in ye mirror's bright reflection
All faithful doctors are perfection.

G. FRANK LYDSTON.—*Cincinnati Medical Journal.*

New Books, etc., Received.

Nerve Prostration and other Functional Disorders of Daily Life. By ROBSON ROOSE, M.D., LL.D., F.C.S. Second edition. London: H. K. Lewis. 1891.

Burdett's Hospital Annual and Year Book of Philanthropy, 1891-1892. Edited by HENRY C. BURDETT. London : The Hospital (Limited).

Golden Rules of Surgical Practice for the use of Dressers and Junior House Surgeons. By a HOSPITAL SURGEON. Bristol : John Wright and Co. London : Simpkin, Marshall, and Co.

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THE
BIRMINGHAM MEDICAL REVIEW.
DECEMBER, 1891.

ORIGINAL COMMUNICATIONS.

ON IMMEDIATE SUTURE OF RUPTURED URETHRA.*

BY GILBERT BARLING, B.S., F.R.C.S.
SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

I HAVE recently had under my care three cases of ruptured urethra, all of which were treated with immediate suture, and though I am unable to relate brilliant successes as the result of the treatment, yet I think I have gained some experience for future guidance in such cases. The operation makes considerable demands upon one's patience and ingenuity, but if only an occasional success is obtained, the trouble taken will not be begrudged when we recall the wretched condition of a patient with a traumatic stricture. Such patients are generally doomed to have a catheter regularly passed for the rest of their days, or to pay the penalty of their neglect by the usual consequences of an untreated stricture of the worst kind. The details of the cases are briefly as follows:—

Case 1. A powerful man, aged 49, was admitted to the General Hospital on July 24th, 1890, suffering from a squeeze by railway trucks. Numerous fractures of the pelvis could be made out, and the pubic bones appeared to be detached through the horizontal and descending rami from the rest of the pelvis;

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* Read at a meeting of the Birmingham and Midland Counties Branch of the British Medical Association, March, 1891.

blood escaped from the urethra, and it was found impossible to pass a catheter into the bladder. The patient suffered very slightly from shock, so I determined to suture the urethra if this were by any means feasible. Incision into the perinæum gave exit to a large quantity of clot and fluid blood, and the finger passed into the wound detected extensive comminution of the fractures and much laceration of the soft parts, so that the inferior surface of the bladder could be traced in most of its extent stripped from its connections. The proximal end of the torn urethra was easily found, but the distal with difficulty; the rupture through the membranous portion of the canal was quite transverse, and an interval of nearly an inch and a half existed between the separated ends. Four fine sutures of slightly chromicised catgut were introduced into the ends of the torn canal by means of a small right-angled palate needle (Smith's), one on the roof, one on each side, and one on the floor, all being placed *in situ* before any were fastened, when they were tied in the order above mentioned, a catheter being passed from the meatus into the bladder after the roof suture was tied. The separated ends came accurately together without any tension, and the catheter was absolutely covered in Provision having been made for drainage of the torn cavities in the pelvis, the patient was put back to bed suffering but moderate depression from the operation, which occupied an hour. The urine was drained from the bladder into a vessel under the bed by means of an indiarubber tube attached to the catheter.

At first all went well, the patient had no pain, no urine came through the wound, there was only moderate elevation of temperature. By the 28th, the fifth day, it was found that the catheter had induced a purulent urethritis, so it was removed and a clean one introduced, the latter passing without the faintest hitch, as though it were in a perfectly healthy urethra. On each of the following days the catheter was changed without the slightest hitch, but was still retained in the bladder. On the ninth day—that is, on August 1st—the patient then suffering from pneumonia with severe cough, the catheter could not longer be left in, so the urine was drawn off every six hours or so. On August 3rd urine was unmistakably coming through the perinæal wound. That this had not occurred before, I am of course unable to say positively; but my very strong impression, derived from inspection of the dressings and from the feel of the urethra, is that no leaking had occurred up to this time; and as on the ninth day the urine collected measured 96 ounces, it is certain that very little can have escaped by the perinæum. However, from this time forth the perinæal wound was bathed in urine; but still a catheter could be passed without much difficulty, though not so easily as before The patient died from suppuration and pneumonia on August 11th.

At the autopsy the ends of the urethra were found completely separated. The fractures of the pelvis were very extensive In addition to the quadruple fracture separating the pubic bones from the rest of the pelvis, the ilium on each side was fractured near the sacrum

Case 2. On August 1st, 1890, a boy aged 9, was admitted to the General Hospital, having fallen astride on some palings. The perinæum was greatly swollen, blood was escaping from the urethra, and a catheter could not be passed into the bladder.

Perinæal section was performed at once, and a large quantity of blood turned out of the wound, when the urethra could be seen a good deal stripped and displaced to the right of the middle line. The tear in the canal was just in front of the membranous portion and was oblique, from left to right and from before backwards, and the rupture was incomplete, a portion of the roof of the urethra remaining intact. A silver catheter was passed into the bladder, and an attempt made to suture the rent; the oblique direction and the incompleteness of the rupture made this extremely difficult, and I was only able to introduce one catgut suture with a good hold on the urethral walls, but this was sufficient to close the rupture so as to hide the catheter.

As in the first case, the catheter was tied in, and the urine drained off by a tube attached to it. On August 3rd, as the catheter was producing a good deal of pain, it had to be removed, but another was passed without difficulty. August 4th, urine was certainly coming through the wound so a catheter was no longer tied in but was passed every other day. The wound healed rapidly, and the boy is regularly catheterised twice a week, a slight irregularity existing at four inches from the meatus, but a No: 6 bougie can be passed easily.

Case 3.—On August 19th, 1890, a boy, aged 10, was admitted to the General Hospital, having fallen astride a rail. His perinæum was much swollen and discoloured, blood was issuing from the urethra, and a catheter passed about five inches left the urethra and entered a ragged cavity.

Perinæal section was at once performed, and a quantity of blood liberated; the tissues were much lacerated and contused, and it was with difficulty that the rent in the urethra could be found. This was in the membranous portion and was incomplete, two narrow shreds of mucous membrane connecting the proximal and distal portions along the roof. The lesion was a very difficult one to suture, as the ends were ragged and there was some longitudinal splitting on the floor as on the roof. Eventually I managed to insert two lateral sutures of catgut, and one on the floor of the canal, a No. 7 catheter was then passed into the bladder and the sutures tied, the edges of the rent being then so approximated as to completely cover in the catheter. The operation occupied an hour and ten minutes. As in the other cases an indiarubber tube was tied to the catheter to convey the urine into a vessel. For some hours after the operation something interfered with this drainage, and urine escaped through the perinæum during the night, and though this was prevented during the next 24 hours it was evident that the suturing had failed in its purpose.

I have only to add that the boy made an excellent recovery, but that he has a very irregular deep urethra, which demands the frequent passage of a bougie, 7 to 10, to keep it from speedy contraction.

Whilst writing these notes a fourth case of ruptured urethra came under my care. A man, aged 27, was admitted to the General Hospital on November 6th, 1890, who had jumped backwards off some steps and landed heavily with his perinæum on the handle of a barrow. When seen five hours later there was great swelling of the perinæum and scrotum from effused blood and urine, blood was oozing from the meatus, and a catheter failed to enter the bladder. The condition was complicated by the existence of two strictures of the urethra, one at an inch and a half, the other at about five inches from the meatus, and they would only admit a No. 4 catheter. These were first divided by internal urethrotomy, and a guide passed down to the deep urethra. The difficulty of finding the distal end of the urethra was greater in this than in either of the other cases owing to the rupture occurring so far back; it was at the very apex of the prostate, and the rent was very contused and irregular. Owing to the depth of the wound, the irregularity of the tear, and the obscuration of the mucous membrane by the surrounding tissue in the distal portion, suturing was impossible, so I was content to tie in a No. 12 silver catheter and leave the urethra to heal in the usual way. The operation lasted nearly an hour.

Notwithstanding the free opening in the perinæum, the tissues of the scrotum, of the inner sides of the thighs, and about the pubis shewed evidence of extravasation of urine; and on the third day after admission, incision in these parts had to be made. Fair progress was made for some days, but the patient died on November 25th, of suppurative pyelo-nephritis. This I regard as due to the constant presence of a catheter in the urethra.

Ruptured urethra results either from direct or from indirect violence. In the first case, the injury is a blow or kick or fall upon the perinæum, and the rupture is either complete or incomplete. When the violence is indirect, it is applied to the pelvic bones, and on these fracturing, the membranous urethra, fixed as it is under the pubic arch, is displaced by the movement of the bone to which it is so closely united, and is torn from the part of the urethra behind, the rupture being complete. However the rupture may have been caused, the evidence of its existence is nearly always very clear; the nature of the injury, the escape of blood from the meatus, the inability to urinate, the existence of a tense swelling with extravasation of blood in the perinæum, and sometimes a burning pain in the perinæum when urine escapes into the tissues on an attempt at micturition, all make up a characteristic picture, and the diagnosis is complete when the urethra is examined with a catheter. But whether the rupture is complete or incomplete cannot be told with certainty until the injured canal is exposed.

This is not of importance as far as treatment is concerned, because if the catheter fails to enter the bladder, perinæal section is called for in either case, and that at the earliest possible moment, so that escape of urine through the rent into the tissues around may if possible be absolutely avoided. The injured canal being thus exposed, it has been the usual practice to find the proximal end, to pass a catheter into the bladder from the meatus, to tie it in, and to leave the urethra to heal by granulation. The best result following this treatment is a stricture, and one that has unusual tendency to contract, and which is often difficult to dilate from the irregularity of the urethra. The worst result is the production of urinary fistulæ, through which all the urine escapes, the distal portion of the canal being quite obstructed.

The question I wish to raise is whether a routine practice of suturing the rent should be followed, and if so, what else is necessary to secure the best possible result.

The ideal to be attained in these cases is union of the severed urethra by the first intention. Failing that, the next most desirable thing is to secure as close approximation of the divided ends as may be, so as to diminish the amount of scar tissue let into the urethra; and it is important also to reduce the suppuration amongst the perinæal tissues to a minimum, so as to escape the dense fibroid induration which is often associated with traumatic stricture. In neither of my cases did I obtain union of the torn urethra by first intention; and on looking up cases of immediate suture recorded in current medical literature (of which there is no very large number), the only conclusion to be arrived at is that union by first intention has been extremely rare. Indeed, in those cases which are recorded in full detail, so that one is able to judge of the condition for oneself, I am not satisfied that a perfect result has been obtained; yet, at the same time, the results have been better than by the old plan.

Failing to obtain union by first intention, one naturally looked for causes of the failure, and how they may be met. Failure may no doubt be due to suppuration in the peri-urethral tissue from urine already extravasated ere perinæal section is performed; this, of course, can only be avoided by operating at the earliest possible time after the injury. Failure due to the material for suture or to the insertion of the stitches ought to occur but seldom. The best material is well-prepared fine catgut, and the stitches should get a good grip of the corpus spongiosum, including the mucous membrane.

There is little doubt that the chief obstacle to success is the difficulty of keeping urine away from the recently sutured wound. A catheter tied in the urethra has been the usual method trusted to; but it has the drawbacks that a little urine is apt to trickle by its side, and so to interfere with the union of the urethra, and that a catheter tied in for some days irritates, and generally produces a urethritis which is fatal to the much-desired healing. The frequent passing of a catheter instead of tying it in is pretty certain to poke open the wound sooner or later; and if we try to do without the catheter altogether, the recently sutured urethra has to bear the pressure of the stream of urine, and the reparative material is exposed to the action of the urine, which is inimical to healing by the first intention.

In a few published cases, when the rupture was rather far forward there has been sufficient room behind the sutured rent for the *boutonnière* to be made for drainage. This, however, is not often the case; and even if it were, there would still be the risk of a little urine leaking by the side of the drainage tube into the anterior part of the urethra and coming into contact with the tear in it.

The plan I have formulated for any cases I may have in the future is as follows:—Having done perinæal section, and found both ends of the torn urethra, the catheter should be inserted into the bladder. Supra-pubic section should then be done, and the bladder being opened on the point of the catheter the opening should be enlarged until it admits a large-sized drainage tube easily. The catheter should then be removed, and as many sutures inserted into the urethra as seem necessary; four will generally be sufficient for a complete rupture, one on the roof, one on each side, and one on the floor. The suture on the roof should then be tied, and as full sized a catheter passed as the urethra will easily take, this to support the edges of the wounded tissue and to prevent them from unfolding. The remaining three sutures are then to be fastened, and the catheter removed with the utmost care, so that its point does not stick either into the roof or the floor of the sutured part.

It might be an advantage to retain the catheter for a few hours to act as a splint to the wounded urethra, but as already pointed out a little urine may trickle by it and get into the urethra, or, when the catheter is withdrawn, some of the reparative lymph may have stuck to it, and the drag on the tissues may tear apart the edges of the urethra; for these reasons I believe it will be best to remove the catheter. Experience has shewn that though the torn ends may be widely separated they may be brought together with very little or no tension on the stitches.

Part of the perinæal wound may be brought together with deep sutures, and the remainder left open in case of escape of urine there or of suppuration. Subsequently the supra-pubic drain must be looked to to see that it is absolutely free, and it should be kept *in situ* for at least ten days, the bowels should be confined for a week to keep the perinæal muscles quiet, and, all going well, a catheter should not be passed for three weeks.

With the precautions I have described primary union ought, I believe, to be obtained with some frequency. If it is not the stricture will be less formidable than it would be if the ends of the urethra are not approximated by suturing, and, the urine escaping above the pubis, the infiltration of inflammatory tissue around the urethra will be reduced to a minimum, whilst the period of convalescence will be shortened.

REDUPLICATION OF THE SECOND SOUND OF THE HEART.

BY G. A. GIBSON, M.D.
ASSISTANT PHYSICIAN TO THE ROYAL INFIRMARY,
AND LECTURER ON THE PRINCIPLES AND PRACTICE OF MEDICINE AT MINTO HOUSE, EDINBURGH.

SINCE it was discovered by Bouillaud,* this symptom has, with almost perfect unanimity, been ascribed to asynchronous closure, or tension, of the aortic and pulmonary valves. When we enquire more closely, however, into the views held by different observers as to the means by which this failure to act simultaneously is produced, we find considerable divergence of opinion. By von Bamberger † it was attributed to an irregular contraction of the arterial walls, causing the propulsion of successive blood-waves towards the sigmoid valves. Potain ‡ seems to have been the first to assume a difference of pressure within the aorta and pulmonary artery as the cause of the asynchronous action of the valves, and his interpretation has, with various modifications, remained, to some extent, valid until the present time.

It was remarked above that there has been an almost perfect unanimity in regard to the essential cause of the double sound, but it must not be forgotten that there have been other explanations. The only theory worthy of mention which refers the phenomenon to causes other than asynchronous action of the sigmoid valves is that propounded by Sansom.* He considers that the second part of the double sound is produced by the sudden tension of the abnormal mitral curtains, consequent upon the relaxation of the left ventricle. Even if this theory were sufficient to explain the double second sound in cases of mitral disease, it would not account for physiological doubling; and Sansom allows that there are cases which can be best explained by asynchronism of the two second sounds.

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* Traité Clinique des Maladies du Cœur, Tome i., p. 189. 1835.

† Lehrbuch der Krankheiten des Herzens, s. 73. 1857.

‡ L'Union Médicale, N.S. Tome xxxi., pp. 307, 357, 438, 595, 611. 1866.

In truth, the mere existence of the doubling caused by physiological acts, such as holding the breath after a deep inspiration, is sufficient to prove that slight alterations of the relative pressure in the different parts of the central apparatus are sufficient to produce a double second sound. And if double second sound can be produced by slight changes of relative pressure, it is unnecessary to go further in search of a cause for the persistent double second sound of mitral disease. The manner in which changes of relative pressure effect the result must, as is generally recognised, be by causing the systole of one ventricle to terminate a little later than that of the other. The main object of this communication is to attempt to make this matter somewhat clearer.

Long-continued study of some tracings obtained in Birmingham from the conus arteriosus of a man presenting a sternal fissure has made the subject stand out very clearly in my own mind, since they furnish a graphic record of the relations in which cessation of ventricular systole and production of second sound stand to each other. The case has been fully described by Malet and myself,† and some of the tracings further analysed by me,‡ in previous papers.

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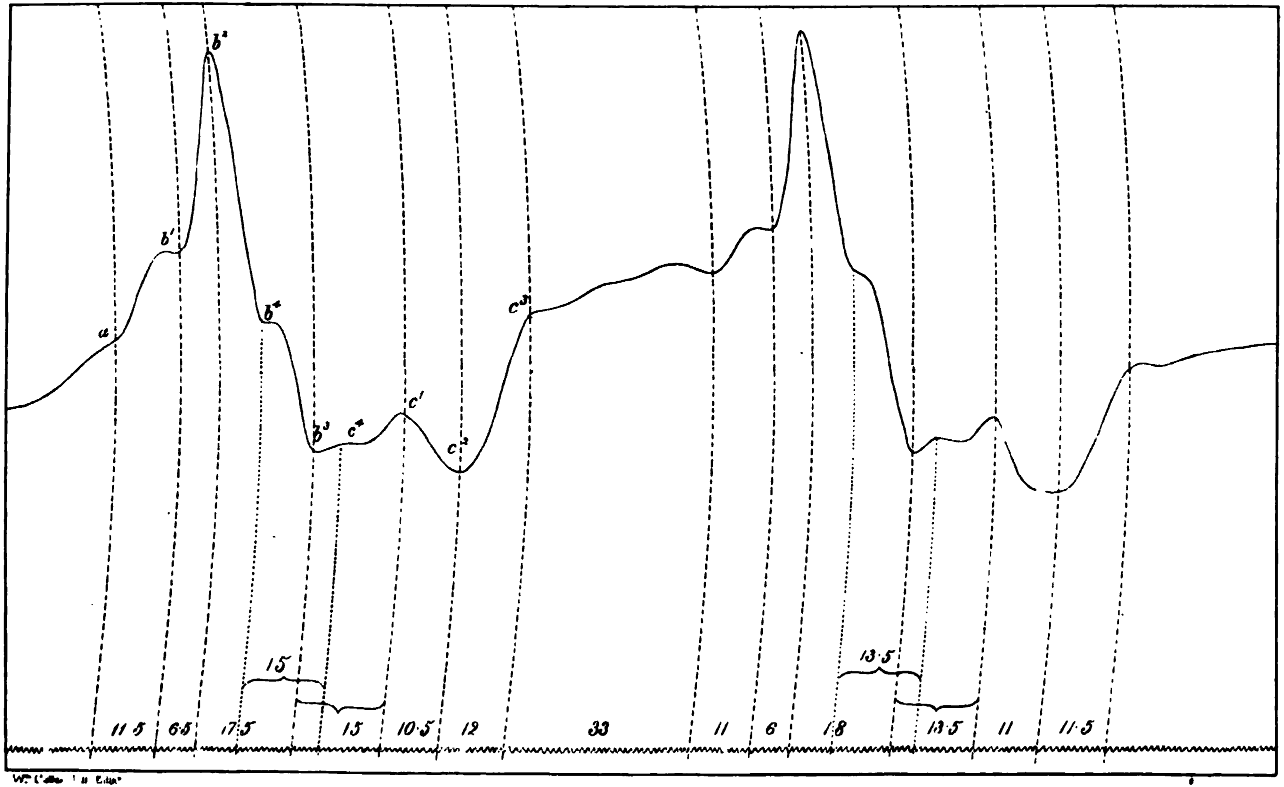
* Manual of the Physical Diagnosis of Diseases of the Heart, third edition, p. 121. 1881.

† *The Journal of Anatomy and Physiology*, Vol. xiv., p. 1. 1879.

‡ *Ibid.*, Vol. xiv., p 234. 1879.



TRACING from CONUS ARTERIOSUS.

Part of one of these tracings, obtained by means of a direct cardiograph and a rapidly-revolving cylinder, registering also the vibrations of a tuning fork marking hundredths of a second, is reproduced in the accompanying plate, which is to be read from left to right. It is needless to give a description of the curve shewn by the tracing; all that it is necessary to mention is that a marks the beginning of auricular systole, b^1 the commencement of ventricular systole—coinciding with the beginning of the first sound—and c^1 the occurrence of the second sound. In the tracing given here, there is on the descending curve from b^2 to b^3 —which is caused by the emptying of the ventricles of the heart—a shoulder marked b^4; and there is also, in advance of c^1, which marks the incidence of the second sound, an elevation, c^4. On looking at the measured intervals of time recorded below the curve, the interesting fact will be noted that the period elapsing between b^3 and c^1 is precisely the same as that between b^4 and c^4. The conclusion is obvious that c^1 and c^4 represent the diastolic recoil on the sigmoid valves, while b^3 and b^4 are the terminations of ventricular emptying on the two sides. Many other tracings taken from the same case shew no shoulder in the position of b^4, and no elevation in the position of c^4; and it is further to be noted that on auscultation of the patient there never was any double second sound. In the latter of the two papers referred to, a laborious attempt was made to explain the facts, but curiously enough it was not remembered that when the tracings were taken the patient always held his breath. It is extremely probable that the respiration was suspended sometimes when in the phase of inspiration, and sometimes during the phase of expiration. If this were so there can be no difficulty in regarding the double wave of recoil taking place at the time of the second sound in many of the tracings as being by a physiological doubling.

The only other point to be alluded to in this place is a question as to which of the two second sounds occurs first.

around the tubercles are affected with a catarrhal inflammation, and their contents are mainly cellular, resembling the exudation characteristic of catarrhal pneumonia; or, as is most frequently the case, the exudation consists of a more or less homogeneous or caseous material, and the alveolar walls, as well as the general fibrous framework of the lungs, are thickened by cellular infiltration and swollen with inflammatory œdema.

Accordingly, then, we may briefly express the entire morbid process by the following equation :—

The different forms of pneumonia in varied combination—fibrinous, catarrhal, caseous, and interstitial, *plus* tubercle, = pulmonary tubercular phthisis.

Now the important problem underlying all this is to determine the relation between these quantities so as to arrange them in their proper sequence. In other words, we must ask ourselves the following questions :—

Is the development of tubercle in every case of tubercular phthisis the initial process, to which the associated pathological changes above mentioned are secondary? or, conversely, do they precede the development of tubercle? Thirdly, dismissing the notion of any casual connection between them, may not the different pathological processes which collectively make up the disease be co-ordinate with, and yet independent of one another?

I must admit that, merely from anatomical inspection and histological investigation, I should certainly not feel disposed to give definite answers to these questions, especially in cases where the disease was advanced.

A knowledge of the clinical history and facts may afford us material assistance in arriving at a proximate conclusion, and thus we undoubtedly meet from time to time with cases where the prelude to the establishment of tubercular disease is represented by a pulmonary catarrh of a simple type, and the tuberculosis is to be referred to the accident of infection from without. I have now in my mind such a case, which I may quote as an example.

A finely-built policeman, of strong constitution, with no history of previous illness and ***not the slightest trace of hereditary taint***, caught an ordinary cold at a picnic on a wet day in the autumn. As a consequence, he had what he termed a "cold on the chest" (bronchial catarrh), which compelled him to remain indoors for a few days. Feeling somewhat better, he resumed his duties, though, as he expressed it, he never seemed able to thoroughly shake off the cold, which left him with an irritating and troublesome cough. Nevertheless he continued to perform his duties; and we know the kind of places and surroundings into which a policeman's duties often take him. About ***three or four months later*** he found he was losing strength and beginning to lose in weight. He often felt chilly and then hot at night, and broke out into perspirations when in bed. Moreover, he became rather short of breath on exertion, his cough became more troublesome, and was accompanied by increased expectoration; and he now noticed that his sputum was often markedly tinged with blood. On one or two occasions he coughed up small quantities—about a teaspoonful—of pure bright frothy blood. He was admitted in the early part of this year into the Queen's Hospital, under the care of Dr. Suckling, with whose kind permission I have been able to observe and quote the case. Physical examination revealed pretty extensive infiltration and consolidation of one apex, and tubercle bacilli were found in considerable numbers in the sputum. He was put under a course of the Koch treatment, and improved considerably, so that in six weeks he was able to leave the hospital.

It would require a considerable stretch of imagination to suppose this man was the subject of latent tubercular disease, that was called forth into activity by the exciting causes of exposure to cold.

In children cases are well authenticated where a broncho-pneumonia following measles or whooping-cough has preceded the development of a tubercular phthisis, and I have myself several such instances amongst my cases. On the other hand, an early hæmoptysis, occurring without any noteworthy premonitory symptoms, affords us strong evidence in favour of the disease being tubercular from the outset, and of a latent and insidious nature. In such cases the individuals are mostly of delicate build and constitution, and there is usually a well-marked hereditary history.

The patient may possibly get out of breath from some extra physical exertion; he has a fit of coughing, which is immediately, and quite unexpectedly, followed by a severe attack of hæmoptysis. Should it at once prove fatal, we may find at the autopsy that the hæmorrhage proceeded from a latent but fairly extensive patch of tubercular disease in the apex of one lung, the existence of which was probably not suspected; and yet degenerative changes, such as caseation and ulceration, had been going on insidiously in the patch sufficient in extent to involve a branch of the pulmonary artery and also the wall of its corresponding bronchus. Possibly a small aneurism of the artery may be found ruptured, though this happens more frequently after the disease has been diagnosed, when hæmoptysis is a late symptom.

Now this latent apical affection represents *a localised tuberculosis*, whose origin and characters may be twofold. In the first place it may have started *directly* from the inhalation of the virus, as a tubercular bronchitis and peri-bronchitis—the so-called apical catarrh, the symptoms of which may have been so slight that the patient did not feel the necessity of seeking medical advice before the occurrence of the hæmoptysis.

Secondly, the disease may have spread to the apex *indirectly* through the lymphatics from some *older* tubercular focus away from the lungs, and appear in the lungs as disseminated interstitial miliary tubercles (partial disseminated miliary tubercle). In both instances the development of the lesion is comparatively slow and insidious; it becomes conglomerate before retrogressive changes set in, and its further spread may for a time be hindered by a development of fibrous tissue at its periphery. Here, again, in its caseous stage we may meet with the difficulty already alluded to in determining the anatomical characters of the initial lesion. The discovery of an older caseous focus outside the lungs, and the presence in the peripheral fibrous tissue of clusters of greyish semi-translucent miliary granulations, favour the second mode of origin just described, as an anatomically true tubercular process. (Baumgarten's indirectly hæmatogenous origin of tubercular phthisis.) What may now happen, supposing the hæmoptysis is not severe enough to kill the patient at once? One of two events: Either the development of an acute caseous pneumonia, rapidly spreading throughout the remainder of the lung, or an acute pneumonic exacerbation, gradually subsiding again into a chronic condition.

As a result of the pulmonary hæmorrhage, the fibrous barrier around the apical disease becomes partially destroyed, and the lung tissue immediately outside is the seat of patches of hæmorrhagic infiltrations (parenchymatous and interstitial); blood mingled with the caseous material containing the tubercular virus is sucked down into smaller bronchi and bronchioles in various parts of the lung, setting up a disseminated lobular pnéumonia, which becomes confluent and rapidly caseates. In the first case the rapid development of the caseous pneumonic phthisis is the result of a sudden and widespread infection of the lung from the aspiration of the tubercular virus, rather than as the direct consequence of the pulmonary hæmorrhage. The corresponding lung, where no hæmorrhage has taken place, is usually implicated before the fatai termination occurs. It is in cases where the apical lesion bore the characters of a tubercular bronchitis and peri-bronchitis that I have observed this supervention of acute pneumonic phthisis. Death takes place usually within a month or two from the date of the hæmoptysis. In the second event, where the acute pneumonic exacerbation subsides into a chronic condition, we can only suppose that the lung was implicated to a less degree, and the pneumonia may perhaps be referred to the pulmonary hæmorrhage. It clears up and becomes arrested by the development of fresh fibroid and indurative changes, and represents merely a further but more limited step in the general advance of the disease. Such cases as the above are not examples of ***phthisis ab hæmoptœ*** as described by Niemeyer, because, as we have seen, a localised but latent phthisis actually precedes the hæmorrhage.

Now, contrasted with this example of secondary caseous pneumonia above described, we shall meet with instances where the tubercle bacilli on reaching the lungs may, from the outset and at once, generate a primary caseous broncho- or lobular pneumonia of a more chronic type, with which the subsequent development of miliary tubercles may be associated as a secondary process. In this inverse order of events in different cases lies the difficulty in the anatomical recognition and correct interpretation of the disease as a whole; for it is represented by an amalgamation of the results of tubercular with those of simple inflammation, and moreover is frequently presented to us on the *post mortem* table in such an advanced condition, that it is impossible from anatomical inspection alone to say definitely what its origin has been, whether primarily tubercular or simple inflammatory. On looking over the *post mortem* records of the cases selected from a large number that have come under my personal observation in the dead-house, I can find 22, or rather more than 14 per cent. where the pulmonary affection was associated with *chronic* tubercular disease in other parts of the body, *e.g.*, bones, joints,[42] skin, mucous and serous membranes, and the genito-urinary tract.

Here we may reasonably assume that in some instances the lungs became infected secondarily by the propagation of the disease through the lymphatic system. (Baumgarten's indirect hæmatogenous origin of pulmonary tubercular phthisis.) At the same time, in other instances a different mode of origin is also conceivable, viz., a later but independent appearance of the disease in the lungs, the result of direct infection from without through the respiratory tract; for we can reasonably suppose that the resistant power of these organs in an individual already a victim of the disease is sensibly diminished, so that the respiratory system becomes extremely susceptible to the pernicious influence of the virus. It is also possible—nay, in the highest degree probable, that the disease in the lungs of some of these cases was the result of the concurrent action of both modes of infection, direct and indirect.

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[42] In three cases of spinal caries there was a direct extension of the disease to the lung.

In another highly interesting though much smaller group of cases (5·3 per cent.) the tubercular character was, beyond all doubt, engrafted upon a primary simple inflammatory affection of the lung. The analysis of this group is as follows:—

(A.) Unresolved catarrhal pneumonia, the sequence of measles and whooping-cough, in which a tubercular phthisis in an early stage of development was found.—Four cases.

(B.) Membranous laryngitis and acute lobar pneumonia with pleurisy, terminating in empyema, with much thickening of the pleura, fibroid induration of the lung and bronchiectasis, caseous pneumonia and grey racemose tubercle in an early stage.—Two cases.

(C.) Chronic pleurisy with old and greatly thickened and adherent pleura, pleurogenic interstitial pneumonia and bronchiectasis, secondary tubercular peribronchitis and interstitial tubercle.—Five cases.

In these eleven cases the tubercular disease was latent, but evidently recent, and so slight in its extent that its diagnosis during life was masked by the symptoms of the major affection.

There is yet a third and also small group, eleven in number, to which a certain amount of interest may be ascribed, in that the tubercular affection of the lung occurred in association with other diseases of an entirely different character. Here, too, the pulmonary disease was essentially chronic in its character, and, comparatively speaking, slight in its extent.

(A.) Chronic interstitial nephritis, four cases. In all there was chronic thickening and adhesion of the pleura; in two of them old encapsuled caseous masses were found in the apex of one lung accompanied with fibroid induration, and around them more or less recent disseminated grey tubercles (partial disseminated miliary tubercle).

(B.) Mitral stenosis—caseous tubercular bronchitis and broncho-pneumonia with cavity formation in one lung, though not extensive—a few grey miliary and caseating tubercles scattered here and there in the upper lobes of the opposite lung.—Two cases.

(C.) Chronic alcoholism (alcoholic neuritis).—Two cases.

(D.) Death from accident, where a comparatively early stage of tubercular phthisis was found at the *post mortem*.—Three cases.

Excepting chronic alcoholism, which is set down as a predisposing cause, it is conceivable that the pulmonary disease originated quite independently. In two of the cases of nephritis the tubercular disease was in part obsolescent, and probably quite as old in date as the renal disease. In the other two it is possible that it developed subsequently to the renal affection. Clinically speaking, the symptoms of the renal disease were the conspicuous features in all four cases, and though a pulmonary affection of a chronic nature was recognised, its tubercular character was not certainly diagnosed, even if it were suspected.

Now all the remaining cases may be included in one group, in which the tubercular phthisis constitutes the *primary substantive* disease that was diagnosed and treated as such. In fact, all the patients were obviously suffering from phthisis, for which they came to the hospital to be treated.

In this large series of cases, between eighty and ninety in number, all the anatomical varieties of the disease are represented; and fortunately I happen to have still in my possession a large number of histological preparations which I made from the material collected from typical examples in this as well as in the other groups I have just enumerated.

THE MORBID ANATOMY AND HISTOLOGY OF TUBERCULAR PHTHISIS.

It has been said with some truth that, from an anatomical point of view, no two cases of tubercular phthisis will be found exactly alike; and no doubt one explanation of this fact is that phthisis, like many other diseases, often runs an irregular course; for although the tendency in the main is a downward course from bad to worse, its progress, as indicated by its symptomatology is disturbed by considerable fluctuations. Its apparent favourable progress at one time may be suddenly interrupted by fresh exacerbations of a more or less acute character, and we may find, at the *post mortem*, variations in the morbid appearances corresponding with this irregularity in its clinical aspects. Still, if we adopt a broad clinical classification of the disease into the (1) acute, (2) subacute, and (3) chronic varieties, we shall also find certain anatomical changes predominating in one or the other case which correspond with the clinical type of the disease, and also *more or less*[43] with the physical signs noted during life.

Let us first take a case of acute phthisis, in which the duration of the disease from its onset to its fatal termination covers a period varying from a month or six weeks to two or three months at the most. The individuals attacked are usually young subjects, and the disease in some of its clinical aspects, particularly in regard to its physical signs, resembles at first unilateral acute pneumonia, implicating the upper lobe of the lung, from which, however, it soon becomes differentiated by its protracted course, and by differences in the temperature curve and in other local and general signs. Basing my description of its morbid anatomy and histology on several typical cases of which I have complete notes, we shall find both lungs affected; but the one in which the disease commenced is involved to such an extent that it may be almost solidified throughout. In a young adult its weight may vary between forty and fifty ounces. The disease is most advanced in the upper lobe, which may be found partially adherent to the thoracic wall by loose and œdematous fibro-cellular tissue; the rest of the lung is free, but its pleural surface may present patches of recent fibrinous inflammation. On making a longitudinal section through the entire lung from the middle line of the posterior border to its root, we obtain an extensive view of the lesion, which presents to us without doubt the characters of a pneumonia of a special type, viz., a rapidly extending caseous pneumonia. The cut surface has a reddish grey colour, the greyish mottling being most marked in the upper part, the darker red being the basis or predominating colour in the lower part of the lung. But *the distinguishing feature is the presence of distinct and opaque yellowish white spots and patches*, which are scattered all over the cut surface. They are usually small, irregular in form, with rounded margins; but here and there a few assume a trifoliate shape, corresponding to the infundibula or alveolar passages.[44] Some are distinct and sharply demarcated, others pass insensibly into the reddish grey hepatisation around them. In the upper lobe we may find one or two small excavations, irregular in shape, with shreddy margins caused by the disintegration of the tissue.

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[43] I have emphasised this. because, in regard to this point, every pathologist of experience knows, as the result of his observations, that the extent of the disease as mapped out during life by physical diagnosis frequently does not correspond with the actual extent of the disease found in the *post mortem* room; in other words, it often falls far short of it, and thus the terms "clinical signs of very early or of a fairly pronounced phthisis" convey to the pathologist only a proximate estimation of what the real anatomical extent of the disease may be.

Thus in the lung where the disease is most advanced we have to do with a pneumonia that is quite lobar in its distribution. In the corresponding lung, where it is in an earlier stage of development, we see the lobular characters of its distribution well defined, especially in the upper lobe, where the pneumonic foci are scattered in the pulmonary tissue as roundish nodules or nodes. Some of them reach the pleural surface, on which they project and can be felt as distinct lumps. They vary in diameter from one-eighth to five-eighths of an inch, and, on section, are of a reddish grey colour, and the larger frequently shew an opaque yellowish white centre. In consistence they are firm but frangible ; the cut surface has a well-marked granular but a peculiarly dry appearance; in fact, with the exception of their opaque yellowish centres, the larger nodules represent a hepatisation intermediate to the red and grey stages of an ordinary croupous pneumonia.

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[44] Without wishing to disturb the gastronomic feelings of my readers, I may compare such a lung on section to a cake of a reddish brown colour which is everywhere stuffed with pieces of almonds representing the opaque yellow patches.

In the very acute cases interstitial changes are scarcely recognisable with the naked eye, except, perhaps, in the upper lobe of the lung most extensively involved; there a few œdematous-looking pinkish grey strands of thickened interstitial tissue may be seen on close inspection in the hepatised parenchyma.

Towards the base of the less affected lung the lesions become still smaller and more scattered. Here they are, in fact, small foci of tubercular bronchitis and peri-bronchitis, in which a few of the surrounding alveoli become involved; and they correspond to that variety described in some text-books as soft grey or early yellow tubercle. Thus, in one and the same case we have seen all the varieties of caseous pneumonia described by some authorities, viz., lobar, lobular, and broncho-pneumonic. I must not omit to mention that the occurrence of a primary lobar form has been called in question by some pathologists who do not believe that an entire lobe or a great part of it can be all at once attacked by caseous pneumonia; they hold that the disease appears first in a lobular form, and subsequently becomes lobar by simple extension and confluence.

Passing now to the *histology* of the disease, let us examine, 1, a distinct opaque yellow patch ; 2, the reddish grey hepatisation around it, or that of one of the smaller lobular foci; 3, and lastly, let us take one of the smallest foci last described, *i.e.*, tubercular peri-bronchitis, or broncho-pneumonia.

In 1 we have typically represented the caseating process. All we can make out with a low power are the mere outlines of a number of alveoli, every one being filled with the same sort of material. In the centre or thereabouts we may, perhaps, be able just to distinguish the outlines of an intra-lobular bronchus, in which the material is breaking up into fragments.

Under a higher power all structural details of the bronchial and alveolar walls are lost,[45] and the exudation within them appears to be quite homogeneous. In some alveoli it is composed of a coarsely reticulated glassy substance, the fibrin and the disintegrating cells having degenerated into a coagulating necrosis; in others it is more or less opaque and granular; nuclei and their nucleolar remains deeply stained, and numbers of highly refractive fatty granules are scattered amongst it, and tubercle bacilli, isolated or in small masses, are here and there visible in the field of the microscope.

2. In the more recently hepatised parts the structural details come more clearly into view. The alveolar walls look somewhat thickened, and are infiltrated here and there with lymphoid cells and a few red blood corpuscles; sometimes capillary vessels filled with red blood corpuscles are seen coursing in them. With regard to the intra-alveolar exudation, ***the variability in its composition is one of the distinctive features of the pneumonic inflammation.*** In a number of the alveoli situated at some distance from the caseous part, ***a certain amount of coarse fibrin***, entangling in its meshes a few red and white blood corpuscles, ***is a constant element***, and it indicates the exudative character of the inflammation. But the predominating cellular elements in the exudation are large roundish or polyhedral and coarsely granular cells, the offspring of the alveolar epithelium, which may sometimes be seen sprouting or budding from the alveolar wall. In some alveoli the exudation is entirely composed of them, and here we have an indication of an inflammation proliferative in character (catarrhal pneumonia). Many are binucleated, others are beginning to disintegrate and contain fatty molecules. In the alveoli nearest to the caseating part the exudation is commencing to degenerate and to melt down into a homogeneous glassy-like material (coagulative necrosis).

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[45] I have not been able to make out in the caseous parts the thickening of the alveolar walls by an adenoid growth in them, upon which the late Wilson Fox laid such stress as representing the true tubercular lesion. The walls degenerate contemporaneously with the exudation included within them.

Tubercle bacilli are also mingled with the exudation. Quite exceptionally we may meet with an anatomically tubercular formation, *i.e.*, a reticular giant-celled granulation. But in this acute form of caseous pneumonic phthisis their occurrence is so seldom that we may look through many fields of the microscope before finding one.

3. Taking next one of the smaller foci, which are scattered in a more or less discrete fashion towards the base of the less extensively affected lung, we find, on microscopic examination, a repetition of the histological changes, only limited within a much smaller area.

In the centre is a small bronchus cut across transversely or obliquely, as the case may be; its epithelial lining may have entirely disappeared, or be only partially preserved; its lumen is occupied with a caseous detritus; its wall perhaps a little thickened by cellular infiltration, or, as is more frequently the case, partly effaced by the degenerative changes taking place in and around it. Those alveoli grouped immediately around it contain a similar caseo-cellular exudation, and their walls are somewhat blurred Only in a few, quite at the periphery, are structural details clearly defined ; in them the exudation is fibrinous and cellular, but the proliferated alveolar epithelial cells predominate.

Histological examination of a ***small conglomeration*** shews a ***somewhat larger*** bronchus as the centre-piece, with a proliferating epithelial lining and cellular contents. Grouped around it are the separate nodules of tubercular bronchiolitis, or ***infundibulitis***, if one dare coin such a term ; for the centre of each little nodule is formed by either a bronchiole or an alveolar passage (infundibulum), which is stuffed with a caseous and cellular material, while in the group of alveoli belonging to it, the exudation is more cellular in character. The term which Powell[46] uses to designate the entire process, ***broncho-alveolitis***, is a very graphic and intelligible one. By others it is called tubercular bronchitis, peri-bronchitis, or simply broncho-pneumonia. At all events, we shall find it to be the predominating lesion in most cases of phthisis.

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[46] "Diseases of the Lungs." 3rd Edition.

Such then is the histology of the most acute form of pneumonia phthisis, the "phthisis florida" of German, and "galloping consumption" of English, authors. Its essential features are, (1) the retrogressive changes that accompany and almost go hand in hand with the pneumonic infiltration; (2) the variable characters of the intra-alveolar exudation, and the invariable presence of tubercle bacilli, which distinguish it from ordinary fibrinous and catarrhal pneumonia.

An interesting question is what causes the caseation. Some refer it to the obliteration of the pulmonary vessels by the interstitial changes in the alveolar walls, and by the endarteritis of smaller branches of the pulmonary artery; changes we shall notice pretty frequently in the more chronic forms of phthisis. Then, again, in these acute cases we are considering where such interstitial changes are much less prominent, it has been suggested that the pressure exerted by the alveolar exudation may operate as a cause. But this explanation can scarcely hold good, else how do we account for the absence of such extensive retrogressive changes in acute fibrinous and catarrhal pneumonia. Lastly, the caseous metamorphosis has been attributed to the operation of the tubercle bacilli. In these caseous tracts where interstitial changes are absent this explanation is, I think, the correct one.

In the next case of caseous pneumonic phthisis, which lasted between nine and ten months, *we find the caseous infiltrations invested with a zone of young proliferating connective tissue, in which the development of the giant-celled reticular tubercle is a conspicuous feature.* The pleuritic adhesions were more extensive and firmer in character. In the most extensively affected lung a large cavity was found in the upper lobe. The rest of the lobe together with a great part of the lower was solidified by tracts of caseous pneumonia *coalescing one with another through the medium of a greyish translucent connective tissue.* This large area of consolidation was riddled with small cavities. The base of the lung was aërated, but infiltrated with smaller nodules and soft grey and yellow tubercles.

The upper lobe of the corresponding lung contained isolated nodes of caseous pneumonia, several breaking down centrally to form cavities; towards the base the tubercular infiltration was more discrete and smaller, viz., soft grey and yellow granulations. The microscope shewed the caseous portion of even these isolated smaller infiltrations, ensheathed by a connective tissue zone, in which all trace of the alveoli was lost. Here and there one found a minute point, which microscopical examination demonstrated to be an intra-alveolar formation of giant-celled tubercle. Thus in this case all the varieties of tubercle were represented.

I have observed another curious and interesting fact mostly in connection with those cases of pneumonic phthisis *where the right lung happened to be the least affected one*, viz., while the lesions in the upper and lower lobes were mostly large and pneumonic in character, those of the *middle lobe were all of them miliary*, *consisting in an infiltration of the small firm grey miliary tubercle*, *either discrete or conglomerate.* These small shot-like granulations are histologically made up of giant-celled systems surrounded by a well-defined reticular or adenoid zone. You will perhaps recollect that this variety constituted the pulmonary lesion in some of the cases of general miliary tuberculosis described in the second lecture. In tubercular phthisis they are met with chiefly in the more chronic cases, where they are secondary and described as interstitial tubercles (Hamilton). We shall find them distributed also in the lower lobes towards the bases, but their occurrence in the middle lobe of the right lung has been in my experience so constant that I have made a special note of the fact. Passing now to cases of pneumonic phthisis, where the duration of life was even more prolonged and the disease in consequence more chronic in character, we shall find the fibroid changes more pronounced and extensive, and cavity formation more frequent.

Thus the upper lobe of the lung first affected may be considerably contracted and the seat of multiple excavation. Some of them are the result of bronchiectasis in combination with caseous degeneration of the walls; others proceed from the central softening and disintegration taking place in the parts affected with the caseous pneumonia, in which the exudation, the alveolar walls and connective tissue are all involved. The rest of the lung and also the corresponding one, but to a less degree, shew pathological changes, for the most part tubercular in character but varying in form; thus we find, in combination, the larger foci of pneumonic infiltration, the smaller ones consisting in caseous bronchitis with peribronchitis and pneumonia (soft grey and yellow tubercle), interstitial changes with the development of interstitial tubercle (grey miliary). I have a case which I should like specially to bring to your notice, because it illustrates well the changeable course of some of the more chronic cases and also demonstrates the corresponding diversity of the pathological changes. The patient had four or five years ago an acute attack of pneumonic phthisis affecting the right upper lobe. This subsided, but afterwards he had several intercurrent attacks in which an extension of the disease was noted every time. These secondary attacks were usually followed by an interval during which the health of the patient had comparatively improved, and his hopes of recovery revived. Five months ago fresh pulmonary symptoms appeared, and from that date he gradually got worse up to the time of his death.

At the *post mortem* the right lung was bound down to the thoracic wall by firm pleuritic adhesions The upper third of the superior lobe was converted into a multilocular cavity, the roof of which was torn away and left in the thorax on removing the lung. The rest of the lobe was *much contracted*, and on section contained several smaller cavities, the result of bronchiectasis. The inner surface of the large cavity was naturally uneven from the presence of thickened bands of tissue intersecting it and running it in walls like fluted columns. Here and there a patch of caseous detritus adhered to the lining, which for the most part was smooth. *Caseous patches were* *embedded in the dense indurated tissue between the bronchiectatic cavities in the lower portion.* The upper part of the inferior lobe was completely hepatised by albuminoid and caseous infiltration and riddled with small cavities, while the lower half down to the base contained isolated lobular patches of caseous pneumonia, and smaller infiltrations of soft grey and yellow tubercle. *The middle lobe was infiltrated throughout with conglomerate and discrete firm grey miliary tubercles* (interstitial tubercle)

Left Lung, upper lobe, almost solid, riddled with small cavities, the intervening lung tissue hepatised with caseous pneumonic foci, in other places collapse and carnefication of the lung. Lower lobe crepitant, but congested, and infiltrated sparsely with firm grey miliary tubercle, quite shot-like to the feel, and with little or no tendency to caseate. In this case we have nearly every variety of tubercle combined with chronic indurative inflammation, corresponding with the acute character of the primary and intercurrent attacks, and with the chronic but insidious progress of the disease during the intervals of apparent improvement in the patient's general health.

The above case and those similar in character which I have described before it are examples of an arrested caseous pneumonia subsequently pursuing a more chronic course, and associated with varying degrees of fibroid change. By some authorities they are classed under fibroid phthisis. But with this I cannot entirely agree, because the extent of the tubercular changes is much greater than what we shall meet with in true fibroid phthisis.

REPORTS OF CASES.

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NOTES OF THREE CASES OF A RARE COMPLICATION FOLLOWING SCARLET FEVER.

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Case 1—Amy B., aged 14 years, a tall slight girl, was admitted to the City Hospital, Birmingham, on April 26th, 1890, with Scarlet Fever and Diphtheria. She had a very severe attack, T. 106° F., and intense bright eruption, with great swelling and congestion of the tonsils and soft palate, these structures being covered with diphtheritic membrane. The acute symptoms continued till May the 5th, and were followed by very profuse desquamation.

On May 16th she was allowed to get up.

May the 17th her legs were swollen from the knees down. The swelling pitted easily on pressure, and there were several large irregular-shaped black blotches, due to subcutaneous extravasation of blood, about the ankles and feet. She complained of pain in the limbs, and there was tenderness on pressure. The temperature and pulse were normal and there was no albumen in the urine. The patient was kept in bed for a few days when the swelling quickly subsided and the discolourations gradually disappeared. When allowed up again there was no return of these symptoms, convalescence being uninterrupted. She was discharged on June 16th.

Case 2.—Thomas T., a labourer, aged 25 years, was admitted to the Hospital on 29th of April, 1890, with Scarlet Fever Simplex. The case presented no unusual features till the evening of May 5th when the temperature went up to 103° F., and the patient complained of pain in the cardiac region. No physical lesion could be detected

May 6th. T. 104·4, P. 88, weak and compressible. Pain in region of heart relieved by sinapism. He felt weak and prostrate, had a short cough, dulness over the bases of both lungs, best marked on the left side over which inspiratory crepitus was heard. The skin shewed a rose blush. There was no albumen in the urine then nor at any subsequent period.

May 7th. T. 103·4, P. 92, R. 40. Marked dulness over the base of left lung both back and front; the respiratory murmur was well heard above the level of the fifth rib; below, very faint There was increased vocal resonance. Sputa rusty. Heart sounds weak and indistinct.

May 8th. Patient had a good night, vomited in the morning and had a rigor. T. 105·5, P. 88, R. 40, shallow. Sputa frothy and bright red. Tongue dry.

May 9th. Slept fairly well. T. 104·8, P. 88, R. 48, shallow. Slight diarrhœa; tongue thickly furred; marked dorsal decubitus. Dulness, tubular breathing, and crepitus heard over right lung as high as the third rib Heart sounds very indistinct. Skin acting well. Sputa viscid and bloody. From this date to May 17th the patient continued in a very critical condition, the most marked feature of the pneumonia being the large quantity of bright coloured blood which was expectorated.

May 18th. Patient had a restless night; passed excreta involuntarily; bowels moved about ten times. Expectoration less in quantity, viscid and prune-juice coloured. He complained during the night of pain in his right leg which was swollen, being four inches larger round the thigh and four and a half inches round the calf than the left. The skin was tense and livid-coloured with large black blotches which did not disappear on pressure. The discolouration extended up to the iliac fossa, and the appearance of the limb closely resembled commencing moist gangrene. There was marked tenderness along the course of the popliteal femoral and external iliac veins. T. 98 8, P. 104. Lungs more resonant, crepitus redux heard; little cough; sputa still viscid and bloody.

May 19th. Condition unchanged.

May 20th. Looked better. T. 98·4, P. 88, stronger. Leg one and a half inches smaller than on the 18th; black colour remained the same; less tension and pitted easily on pressure; no clot was felt in any of the veins. The foot felt warm and there was no pain other than a feeling of heaviness and discomfort. Sputa were thick, viscid, and almost black.

May 22nd. Felt better. T. 98, P. 108. Cough and expectoration almost stopped. There was considerable tympany.

May 23rd. Complained of pain in his right leg. During the night, T. 99, P. 104. Absolute dulness and absence of respiratory murmur over the base of the right lung, and feeble vocal resonance. There was much dark reddish purple coloured staining of the skin over the whole of the right side. Sputa very bloody, thick, viscid, and dark coloured.

May 24th. Slept well. T. 98, P. 82. Tongue cleaner; condition of leg unchanged. There was a large swelling, which pitted on pressure, in the right side extending from the flank to the axilla, most prominent over the lower angle of the scapula. The discoloration of the skin noticed yesterday remained the same, with dark blotches similar to those on the leg. The sputa had the same characters as on the 23rd.

May 25th. No apparent change. Patient said he felt better. T. 98·4, P. 84. Lungs not examined.

May 26th. Œdema of side much the same. Leg comfortable. Expectoration more abundant, easier to get up, and still bloody.

May 28th. Œdema of side and leg decreased; extravasations were being absorbed. Lungs examined; clearer. Sputa bloody, dark, and viscid. T. 98·4, P. 72. From this date steady improvement took place, and on June 9th his cough had almost disappeared. Swelling and discoloration of side had gone, and the leg had regained its natural proportions. He was discharged well on the 7th of July.

Case 3. Sydney B., a solicitor's clerk, aged 18 years, a slight rickety youth and a vegetarian, was admitted to hospital on November 14th, 1890, with anginal scarlet fever. The case presented no special features of interest, and he was allowed up on December 3rd. On December 4th he walked about the ward during the day.

December 5th. Both lower extremities, from the knees down, were a deep black colour, due to extravasation of blood. They were much swollen, painful, and very tender to the touch. Temperature and pulse were normal. There was no albumen in the urine. He was kept in bed for a few days, when the swelling subsided and the ecchymoses gradually cleared away. There was no return of the lesion when he was again allowed up, and he was discharged cured on January 20th, 1891.

Treatment in Cases 1 and 3 consisted of rest in bed and the administration of liq. ferri perchlor. in tonic doses. In Case 2, in addition to the ordinary treatments for pneumonia, ol. terebinth. was given to combat the hæmorrhage from the lungs, and seemed of much value. He was kept as nearly as possible absolutely still, and the leg was elevated and wrapped in cotton wool.

Remarks.—In scarlet fever, as in all other debilitating diseases when convalescent patients are first allowed to get up, slight œdema of the ankles and feet is not uncommon, but the subcutaneous ecchymoses noticed in the above cases are very rare, these being the only examples of the complication which occurred in nearly 6,000 cases of scarlet fever treated in this hospital during the past three years and a half. The interest in these cases lies in the relationship which probably exists between the morbid vascular change which produced the extravasation in them and that which causes the very rare and rapidly fatal phenomenon (a case of which was described by Mr. R. H. Davies in the *British Medical Journal* of February 28th, 1891; and a case occurred in this hospital under the care of Dr. W. H. Line), in which very dark purple or black progressive patches, surrounded by an inflammatory zone and accompanied by great pain and tenderness at the seat of lesion, appear on various parts of the body and limbs.

In the case of Thomas T. the œdema of the leg was evidently due to phlebitis of the deep veins, which was shewn by tenderness along their course; and it was thought that the swelling of the side was probably due to some obstruction of the vena azygos major, but whether caused by pressure of the inflamed lung or phlebitis could not be determined. In many respects this case differed from the others.

There was no history of hæmophilia in any of the cases, though the markedly hæmorrhagic pneumonic sputa in Case 2 might be taken as an indication of this diathesis. The sister of Amy B. died in the hospital of scarlet fever maligna, with dark petechial rash. Two brothers of Sydney B. were treated in the hospital at different times, one with anginal scarlet fever and the other with measles. Both had sévere attacks but made good recoveries.

PERISCOPE.

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PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

BY C. A. MAC MUNN, M.A., M.D., F.C.S.

Leucocytosis and Uric Acid Production.—It was shewn by Minkowski (*Monatsh.* x., 624–641) that when extracts of the spleen were warmed for some time with fresh defibrinated blood from recently killed calves, considerable amounts of uric acid were formed. Horbaczewski has now extended these experiments, and has arrived at some important conclusions (*Ibid* xii., 221–275). The extract of the spleen was prepared by digesting the fresh organ with distilled water at 50° C. for eight hours. During the process putrefaction takes place and some gas is given off. The filtered extract is precipitated with lead acetate, allowed to settle, and then filtered. This extract contains substances which, on boiling, *in the absence* of oxygen are decomposed, with the formation of xanthin and hypoxanthin;

if, however, oxygen *be present*, then a quantity of uric acid equïvalent to that of the xanthin bases is produced. It was found that these mother-substances are derived from the lymphatic elements of the spleen, more especially from the nuclei, as Kossell, Schröder, and others had inferred.

Horbaczewski finds that a number of organs, chiefly obtained from calves, but also from fresh cadavers, yield uric acid when treated with fresh blood until putrefaction sets in. Neither the blood nor the organs *per se* contain it until thus treated. Further, when nucleïn prepared from the spleen by Miescher's method is injected subcutaneously into a rabbit, an increase in the uric acid excreted in the urine takes place; and the same thing happens when nucleïn is introduced into the human organism.

Various experiments shew the close relationship between the number of leucocytes in the blood and the quantity of uric acid excreted in the urine; and Horbaczewski thinks it probable that in mammals, under normal conditions, the uric acid is formed from the decomposition products of leucocytes.

Nucleïn obtained from the spleen, and probably other nucleïns, produce a relatively intense leucocytosis as compared with albumin. In a man, after fasting for eighteen hours, a dose of five grains of nucleïn increased the leucocytes by 83 per cent.; in two other experiments the increase was 53·1 and 60·5 per cent. respectively. This result is attributed to a proliferation of the lymphoid elements in the lymphoid tissues of the mesenteric and other lymphatics, as well as in the spleen, bone-marrow, etc.

Proteid Absorption.—Neumeister (*Zeits. Biol.*, xxvii., 309-373) discusses the fate of peptone after its introduction into the body, either from the intestinal canal, or by injection into the blood vessels. It has been long known that albumoses and peptones introduced into the circulation are not assimilated, but like other foreign substances are excreted by the kidneys. Normal blood contains no peptone nor peptone-like substance. When peptone is injected into the blood and the urinary secretion stopped, either by ligature of the ureters, or by injection of a quantity sufficient to cause such lessening of blood-pressure as to produce such stoppage, the peptone rapidly disappears from the blood, and it is inferred that under these circumstances the peptone is discharged into the intestinal canal. Hence it is a form of proteid not *assimilable* by living cells.

Previous experimenters, such as Salvioli and Hofmeister, have attempted to find out *where* the peptone, normally formed from the food in the alimentary canal, is reconverted into normal proteids. The former observer could find none in the walls of the stomach, although that organ was full of peptone, and he was confirmed in this by the latter. Neumeister believes that the change takes place either in the interior of the alimentary canal or in its walls, at least no other tissue produces this change; further, that the regeneration of albumin from peptone takes place concomitantly with absorption, not before it. It is believed by physiologists that it is the epithelial cells which play this rôle, having a similar dehydrating action on peptone that the liver cells have in converting sugar into glycogen.

With regard to the action of the liver cells on peptone, Neumeister finds that the artificial circulation of a peptone-containing fluid through the liver, removed from the animal, but still living, led to a negative result, with the exception of the rabbit. Still the portal vein of a normal rabbit, like that of other mammals, is always free from peptone. The experiments of Seegen are therefore completely negatived.

Fate of Peptone.—L. E. Shore (*Jl. Physiol.*, xi., 528-560) endeavours to solve the question as to what becomes of peptone when directly introduced into the lymphatic channels, and whether lymph cells can assimilate peptone or not. Grübler's preparation, which contains some albumoses as well, was used. Dogs were employed for the experiments. It was found that peptone injected into the blood stream is rapidly excreted in the urine, but when the renal blood vessels are ligatured it passes into the lymph, disappearing from the urine. Injected into the bile-duct after its ligature the peptone also passes in great part into the lymph; but some passes into the blood and with a small amount of bile pigment into the urine. From the lymph in the tissues it is carried into the thoracic duct and thence into the blood. It seems to suffer no change in passing through the lymphatic glands, and as the greater part is recoverable in the urine it suffers little change or none by the lymphatic leucocytes. It is shewn, in fact, that the cells of the lymphatic glands have no power of assimilating the peptone; and that the cells of the liver and spleen also take no part in the transformation. Hence Shore comes to the conclusion that the change into albumin is effected by the epithelial cells of the alimentary canal.

Melanin and Hæmoglobin.—S. Delépine (*Proc. Physiol. Soc.*, 1890, 27-34) comes to the conclusion that melanin is not formed from hæmoglobin for various reasons, which are discussed at length.

Excretion of Uric Acid and Nitrogen in Cases of Leukaemia.—Bearing upon the work of Horbaczewski, referred to above, are some observations of Bohland and Schurtz (*Pflüger's Archiv.* xlvii., 469–509). They had three cases of leukaemia under observation, upon which they made observations of the output of uric acid and of nitrogen, comparing the results with those obtained from normal individuals on the same diet. An absolute increase of the output of uric acid was seen in all three, but more especially in two of the cases. Pott gives the ratio of uric acid nitrogen and total nitrogen in health as 1 to 19·7. In these cases the proportion was 1 to 9·4, 1 to 12·8, and 1 to 24·4. In the last case a good deal of fever was present, which probably increased the proportional output of total nitrogen. The following are the results:—

	Total N.	Uric Acid.	Proportion of Uric Acid N. to Total N.
Normal	———	0·65	1 to 19·7
Case 1	13·1 gr.	1·5	1 to 9·4
Case 2	8·7 „	0·68	1 to 12·8
Case 3	14·5 „	1·8	1 to 24·4

Human Bile.—D. Noel Paton and J. M. Balfour *(Lab. Reports, Coll. of Physicians, Edin.*, iii., 191–240) have carefully analysed the bile obtained from a woman upon whom cholecystotomy for impacted gall-stone had been performed. ***No bile entered the intestine, yet the urine was high-coloured usually, and contained normal urobilin.*** The total nitrogen of the urine and that in the fæces was estimated, and many other interesting observations were made. The average of six quantitative analyses of the bile gave the following results:—

	Per cent.
Ether extract (cholesterin, lecithin, fat) ...	0·075
Alcohol extract (bile salts, soaps, pigment) ...	0·349
Mucin, pigment, and other organic substances insoluble in ether or alcohol	0·461
Inorganic salts, insoluble	0·003
„ „ soluble	0·638

Further estimation of some of these constituents gave the following results:—

	Per cent.
Cholesterin	0·053
Lecithin and fat	0·009
Glycocholic acid	0·356
Taurocholic acid	0·049
Fatty acid (from soaps) ...	0·015

The following are some of the conclusions drawn as to the physiology of the bile:—1. The amount secreted varies greatly under the influence of many factors. 2. The introduction of bile-constituents into the alimentary canal has not so great an effect in increasing the flow of bile as experiments on dogs would indicate. 3. The quantity of bile and of its solid constituents has probably been over-estimated by previous observers. 4. The taking of food has no immediate effect in accelerating the flow of bile. 5. The flow of bile varies much during twenty-four hours, is highest about mid-day, and lowest in the morning. 6. The greatest amount of solids is produced in the liver during the night. This is chiefly due to the organic constituents, the inorganic salts remaining fairly constant. 7. The amount of bile varies with the amount of fluid ingested. 8. The activity of metabolism has a distinct effect on the amount of bile solids produced, but not on the flow of bile. 9. Fever produces a marked and immediate fall both in the amount of bile and of its essential constituents. The mucin and inorganic salts remain unaltered. 10. Of the drugs used, sodium salicylate and calomel were most active in increasing the biliary flow; ox bile less markedly so. 11. The bile plays some part in promoting absorption of fat, but not on that of proteids and carbohydrates. 12. The pressure under which bile is secreted is higher than the blood pressure in the capillaries of the liver. 13. The bile is doubtless an excretion rather than a secretion, for its only digestive action (that on fats) is not very important, 70 per cent. of the fat ingested being absorbed when no bile enters the intestine. The constituents of the bile which are discharged *per rectum* come probably from the blood corpuscles; a correspondence between the amount of bile-solids produced and the nitrogen excreted in the urine supports the view of their close connection.

Experiments shewing that the Liver rejects the bile introduced into the blood.—M. E. Wertheimer (*Archives de Physiologie*, No. 4, Octobre, 1891) has applied the spectroscope in a novel and ingenious manner, to determine the passage of the bile of one animal into that of another when this secretion is injected into the blood, and to prove the fact that the injected bile is got rid of by the liver. The bile of the ox and sheep contains a pigment first discovered by the reporter and named by him cholohæmatin. MM. Wertheimer and Meyer subsequently confirmed its presence in these biles when working on another subject. This pigment gives a peculiar and striking spectrum, which serves for its recognition. The bile of carnivorous animals is free from it, and taking advantage of these facts M. Wertheimer injected the filtered bile of the sheep—shewing the spectrum of cholohæmatin—by means of a Pravaz's syringe into the femoral veins of dogs, having first ligatured the common bile-duct, introduced a canula into the gall-bladder, and washed the gall-bladder out with water at a temperature of 37° C. After normal bile began to flow quite free from blood the injection was performed.

The bile of the dog shewed the characteristic spectrum of cholohæmatin ten minutes after the injection of 14 cubic centimetres of filtered sheep-bile into the femoral vein, and in five minutes in another experiment after the injection of 11 cc. into a mesenteric vein. Moreover the quantity of bile was considerably increased by the injections; and another interesting observation made was, that the urine did not contain either cholohæmatin or other bile-pigment. "Cette expérience fournit un argument solide de plus à l'opinion exprimée par Schiff, que le foie utilise directement pour le produit de sa sécrétion, les matériaux de la bile résorbés dans le tube digestif."

The liver is therefore capable of rejecting immediately, and without further elaboration, those biliary pigments which have got into the circulation. Wertheimer found also that when he introduced into a part of the intestine, isolated by means of two ligatures, from 100 to 120 cc. of filtered sheep-bile, the spectrum of cholohæmatin was absent from the bile, a part of this pigment being decomposed in the intestine. Several experiments are recorded which all led to the same conclusions.

Deposits of Iron and Glycogen in the Tissues.—S. Delépine (*Proc. Physiol. Soc.*, 1891, 35-39) states that he has had the best results in detecting iron—the so-called "free iron"—by first placing the specimens in a 5 to 10 per cent. solution of potassium ferrocyanide, then washing in water, and lastly placing them for a time, varying from a few minutes to a few hours, in a 0·5 to 1 per cent. solution of hydrochloric acid.

Hæmoglobin does not respond to this test, or rather the iron in it. The term "free iron" is believed by Delépine to be incorrect, and he believes that the metal is present in a loose combination with nucleïn (or other albuminous material) deposited in the cells, which combination is generally colourless, although it may appear as brownish granules in the kidney.

Since the liver gives the reaction better after a few days' immersion in alcohol or glycerin, it is probable that these exert a loosening of the union between the iron and the organic substance. It is further believed from a study of these reactions, which were observed in a case of pernicious anæmia, that the iron is more firmly combined in the liver than in the kidney cells.

For making permanent specimens to shew deposits of glycogen or lardaceïn in cells, Delépine washes the sections with a solution of iodine in chloroform, dehydrates with alcohol, clears with oil of cloves, and mounts in chloroform balsam coloured with iodine.

Excretion of Iron.—R. Gottlieb (*Zeit. physiol. Chemie*, xv., 371-386) observes that the question of the absorption of salts of iron is of great importance, but still involved in obscurity. We are ignorant, too, as to how the iron is excreted. Very little passes away by the urine, even after intravenous injections of iron salts. Observers are not agreed as to whether it passes away with the bile or not. In the present experiments quantitative analyses were made for the first time. Dogs were used for the experiments, and the salt injected was the double tartrate of iron and sodium, dissolved in a weak alkaline solution. Of 100 milligrams subcutaneously injected during four days, 96·9 appeared in the fæces over the normal quantity previously found there. The observations extended over the four days and the twenty-four days following. Hence, practically, the whole of the iron passed into the intestinal canal. Intravenous injections were followed by the excretion of 70 per cent. through the same channel. After protracted injections, the greater part of the metal left in the body was found in the liver. As to how the iron ultimately reaches the intestine, Gottlieb believes that it is not by the bile but by the circulating blood, the iron being in the end removed from the blood by the intestinal epithelium, and excreted into the intestine.

The Ether-sulpho-acids in Urine and Intestinal Disinfection.—Dr. Albert Rovighi (*Zeit. physiol. Chemie.* xvi., 20-46, November, 1891) publishes a long and important paper on this subject, which contains an enormous number of carefully-made analyses of the combined and preformed sulphates in urine. The amount of the former or the ethereal hydrogen sulphates is the measure of the intensity of the putrefactive processes in the intestine, and probably elsewhere.

According to R. van den Velden, the daily amount of these ether-sulpho-acids is about 0·278 grams, but may vary from 0·094 to 0·617. Calling the preformed, *i.e.*, ordinary sulphates A, and the combined or ether-sulpho-acids B, the quotient A : B for a normal individual is about 10·5. According to G. Hoppe-Seyler, it is 11·6, the daily amount of the combined acids being 0·22 gram. Baumann's method as modified by Salkowski was used in the determinations, the experiments having been made on Rovighi himself, on sick people, and on dogs.

The conclusions arrived at are briefly as follow:—1. The quantitative estimation of the ether-sulpho-acids in urine is an important criterion for estimating the putrefactive processes in the intestine. 2. The amount excreted varies according to the time of day, so that the urine of twenty-four hours should be collected and samples of that quantity analysed. 3. The excretion is less in children than in adults. 4. The groups of terpenes and camphors, especially oil of turpentine and camphor, diminish in dogs the excretion of the combined sulphates in the urine considerably and lastingly, *i.e.*, when the doses are large. 5. Although this effect is not so great in the human subject, yet the administration of these drugs in different intestinal disturbances is to be recommended. 6. Enemata of tannin only diminished to a slight extent the excretion of the combined sulphates in the case of a patient suffering from entero-peritonitis. 7. Large doses of boracic acid have a marked effect, but unpleasant consequences are apt to follow doses sufficient for the purpose. 8. The use of Carlsbad and Marienbad waters at first increases but afterwards diminishes the excretion. 9. Kefir, in daily doses of 1½ litres, diminishes intestinal putrefaction, this action being partly due to its containing lactic acid.

Indigo-red in Urine.—One of the red pigments in urine has been supposed to be indigo-red (indirubin), but the proof has not been forthcoming until now. H. Rosin (*Virchow's Archiv*, cxxiii., 519-566) has prepared this pigment from commercial indigo, from plant indican, and from urine, and finds that the indigo-red of urine is identical with that of plants. Those pigments, already described, which are identical with indigo-red are Heller's urrhodin, (Schunck) Leube's pathological pigment, and Plosz's urorubin. The red pigments which are not identical with it are the Skatol pigment, Nencki and Sieber's urorosein, uroerythrin, urohæmatin, Giacosa's pigment and urorubrohæmatin.

REPORTS OF SOCIETIES.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

PATHOLOGICAL AND CLINICAL SECTION.

Meeting held on Friday, October 30th, 1891.

Chairman, A. H. CARTER, M.D., F.R.C.P.

Dr. Suckling read notes of a case of thoracic aneurism.

Idio-muscular Contraction.—Dr. T. Stacey Wilson exhibited a patient with rapidly advancing phthisis, who shewed in a most marked degree the abnormal muscular irritability common to this and other exhausting diseases, and known as idio-muscular reflex contraction. On tapping over the fibres of the pectoral muscle with a force not greater than that used in ordinary percussion, the portion of muscle struck rose in an elevation more than a quarter of an inch high and of cartilaginous hardness.

This persisted for three or four seconds, and did not travel as a wave along the fibre struck. It was only on extremely gentle percussion that both the stationary and travelling elevations could be elicited. As is usual, the phenomenon was very much more distinct on the side on which the lung disease was most advanced.

Obstructive Jaundice.—Dr. Foxwell shewed a man, age 54, glass flattener, who had been deeply jaundiced since October, 1890. His mother died at 45 from cerebral hæmorrhage. He himself had been subject to occasional attacks of gravel, and had always been a very stout though very strong man. He had also several times suffered from attacks of severe aching pains in his right abdomen, but these had never been followed by jaundice, nor did they seem to be typical of gall stone colic. One year ago, after a slight attack of pain, jaundice came on, and gradually increased in intensity till Christmas. Last June he had a typical and severe attack of gall stone colic, and since this time he has steadily improved both as to his general condition and as to the intensity of the jaundice. Even since his admission to hospital, on September 14th, the bile pigment in the urine has lessened and more has appeared in the fæces. His liver was two inches below the costal arch, with a soft rounded edge. There was no indication of the gall bladder. Dr. Foxwell supposed that his common duct had become blocked by inspissated bile or an actual stone last October; that last June this had been passed, leaving the duct imperfectly blocked either by another stone or by inflammatory thickening and constriction. As to the existence of other stones in the bladder, this was probable. The question Dr. Foxwell wished to suggest to the society was whether an operation were advisable, first to empty the bladder of any stones it might contain—a preventive measure—secondly, to examine the common duct to see if a stone still remained in it. He, personally, was against operation, believing that, firstly, to open a gall bladder which was not certainly known to contain stones and which gave no symptoms of discomfort, etc., merely as a preventive measure, was not justifiable when we bore in mind the large number of bladders containing stones, which are seen *post mortem*, in people who have died of quite other diseases; and secondly, as the patient was so rapidly and painlessly improving in every way, he could not advise the serious operation of crushing a stone in a common duct of an enlarged liver where the gall bladder had not been shewn to be enlarged, but was probably well up underneath the liver.

Lichen Scrofulosorum of Hebra —Dr. Leslie Phillips shewed a girl, ætat 13, presenting widely distributed patches of lichen scrofulosorum of Hebra. The parts affected were the trunk, both anterior and posterior, especially the lower part of the belly. The patches were formed of aggregations of pin-head papules, pale fawn in colour, and slightly itchy. The skin between the papulæ was healthy. There were some small patches on the arms and thighs. The case was complicated with slight patches of impetigo contagiosa spread from the nucha. The disease had lasted four months, and the child was red-haired and presented features formerly held characteristic of the "strumous diathesis."

Double Hydro-nephrosis.—Dr. A. H. Carter shewed a remarkable specimen of double hydro-nephrosis associated with horseshoe kidney. It was taken from a man aged 37, a blacksmith who died suddenly, with uræmic symptoms, in the Queen's Hospital on October 15th. The pelvis of each ureter was blocked by a large uric acid calculus, and other calculi were met with in the cavities of the kidney. (The facts of the case will be published more fully.)

Abscess of Ovary.—Mr. John W. Taylor shewed a specimen of abscess of the ovary, accompanying acute salpingitis, which had developed two weeks after curetting the uterus for obstinate menorrhagia. There was an antecedent history of purulent vaginal discharge, which may possibly have been gonorrhœal in origin. The patient was now convalescent.

Formation of Fibrin in Ovarian Cyst.—Mr. J. W. Taylor shewed a mass of fibrin which was found in an ovarian cyst that he had recently removed. The patient was suffering from subacute febrile symptoms at the time of operation. Since the ovariotomy the temperature has been normal.

Dr. Purslow shewed the following specimens :—

1. *Cyst of Labium.*—Removed from a young married woman. A cyst in the same spot had been incised five years previously, and this had formed since marriage fourteen days previously.

2. Similar cyst removed from right labium of married woman. One in the left labium had suppurated, and was treated at the same time by incision and cautery. Dr. Purslow pointed out that simple incision of these distension cysts was usually followed by recurrence, and advocated their complete removal by dissection as the best method of treatment.

3. *Cyst of Vaginal Wall.*—This occurred in a married woman who had had two children. She was told by a medical man that her "womb came down," and was sent to the hospital for treatment. When examined, in the left lateral position, she appeared to have a prolapse of the anterior vaginal wall, but there was an unusual translucent appearance of the prolapsed part. Examination with Sims' speculum shewed that the bulging was limited to one-half of the anterior wall. Under chloroform, the cyst was opened and the greater part of its wall excised. The fluid was of a mucilaginous consistence.

MIDLAND MEDICAL SOCIETY.

Wednesday, October 28th, 1891.

Mr. BENNETT MAY, F.R.C.S., in the chair

Eczema of the Eyebrows.—Mr. Eales shewed a chronic affection of the eyebrows causing dense crusts to form, which he considered to be due to an eczematous inflammation. The patient was a lad aged 17, and he had suffered from the condition since childhood. He also had patches of eczema behind each ear running an equally chronic course. There was a history of eczema on his maternal side.

Paralysis of the Face.—Dr. T. Stacey Wilson shewed a young woman with paralysis of the right side of the face, together with distinct affection of the sensory part of the fifth nerve. There was numbness of the face extending to the middle line and just on to the neck, also loss of common sensibility of the right half of the tongue and mucous membrane of the cheek, also marked diminution in the sensibility of the conjunctiva. There was no tenderness of the nerves at their points of exit. The various sensory branches of the fifth nerve were all affected to an equal extent, and the motor ones scarcely at all. The attack occurred simultaneously in the seventh and fifth nerves, and, in spite of the absence of other paralysis, it seems necessary to locate the lesion in the cerebral meninges. The other points of interest in the case were that the palate moved perfectly and that the uvula could be completely retracted without the least sign of paralysis. The hearing was distinctly impaired on the affected side, for although the patient could hear sounds with that ear, all power of distinguishing them was lost. Considering that the membrana tympani was of normal tension and appearance, this defect would have to be accounted for by paralysis of the stapedius muscle. Taste on the anterior part of the tongue was lost, thus supporting the theory that the taste fibres of the chorda tympani come direct from the brain rather than through Jacobson's nerve, unless, indeed, the affection of the fifth be accountable for this loss. There was less trophic disturbance of the conjunctiva than is often seen in uncomplicated Bell's paralysis.

Dr. T. Stacey Wilson also shewed a man, aged about 30, where the symptoms seemed to justify a diagnosis of syphilitic affection of the meninges over the left parietal region from the lower part of the fissure of Rolando to the occipital lobe, and involving the neighbourhood of the angular gyrus or superior tempero-sphenoidal convolution. He had suffered from occasional epileptiform attacks, followed by numbness and some anæsthesia of the right arm, transient aphasia of a sensory type, transient spasms of the right arm and right side of the body (without unconsciousness) with a slight degree of paresis. In the more severe attacks there was slight twitching of the right side of his face. His illness began with a severe attack of hemiplegia four years ago, since which time he has had three or four slighter attacks at varying intervals with the symptoms above noted.

Tumour of the Upper Jaw. –Mr. Barling shewed a specimen of tumour of the upper jaw removed from a lady aged 40. The growth, a fibro-sarcoma, grew from the periosteum of the right superior maxilla, and had existed several months. No incision of the cheek was necessary.

Uterus and Ovaries.—Mr. J. W. Taylor shewed the uterus and ovaries of a patient on whom he had performed the operation of total extirpation from the vagina, on account of cancer involving the upper part of the cervix uteri. The operation was done on July the 20th, and the patient had made a good recovery.

Paper.—Dr. Simon read a paper on the influenza epidemic of 1891.

REVIEWS.

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NERVE PROSTRATION AND OTHER FUNCTIONAL DISORDERS OF DAILY LIFE.*

THIS large volume of nearly 700 pages strikes the reader as a very ample allowance of space for the subject indicated in the title page, but on looking at the table of contents we find it is made to include every kind of disturbance of function, altogether transcending the limits of functional nervous disease, so that we wonder not so much at the extent of the book as at the author's moderation in not including many other conditions, such as diabetes, gout, insanity, and climacteric disorders, which would come at least as well under his title as obesity and facial paralysis. On looking at the text we find the type is double-leaded, so that after all, the number of pages might have been reduced by two-thirds.

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* Nerve Prostration and Other Functional Disorders of Daily Life. By Robson Roose, M.D., LL.D., F.C.S. Second edition. London: H. K. Lewis. 1891.

This plan is open to the objection that too much gets put down to nervous disturbance, and the organic disorder which really underlies and causes the mischief is overlooked. Ewald has shewn that many cases of agoraphobia are gastric in origin, and may be treated by remedies directed to the stomach One chapter is devoted to spinal irritation, although it is very doubtful if such a condition really exists. At any rate, we can say that we have never met with a case which we were obliged to class in this very obscure group, and the author's indications for diagnosis are absolutely worthless. He says "the diagnosis of spinal neurasthenia is to be made chiefly *per viam exclusionis,*" and then that "the diagnosis of spinal irritation is less easily made." If the latter cannot be excluded, the former diagnosis becomes impossible; and on reading the paragraph on diagnosis carefully, we find nothing but points of difference with organic spinal disease, and the admission that cases of spinal irritation are not unfrequently placed in the category of hysteria. He attempts no definition of hysteria except that it "consists of a group of symptoms, occurring mainly in females, and indicative of functional disturbance of the nervous system in general." When he comes to its symptomatology, he says "it is well-nigh impossible to give a succinct and connected account of the protean manifestations of hysteria," and then gets out of the difficulty by describing some of the commonest symptoms of hysteria major. On turning to diagnosis we find that he discusses its differentiation from epilepsy, organic brain and cord disease, and then suggests that the occurrence of typical hysterical symptoms, convulsions, globus, etc., will differentiate it from neurasthenia. It is noteworthy, in reference to this confusion, that he advocates the Weir-Mitchell treatment for neurasthenia and hysteria equally, though there should be little doubt that the most powerful of all the factors in that treatment—viz., seclusion—is required for the treatment of hysteria only.

The chapter on hysteria is exceedingly bald and poor, and quite fails to do justice to modern clinical knowledge. In his description of chorea Dr. Roose says not one word to indicate that it has been ever observed in adults and especially in the aged, and his differential diagnosis takes only one other form of tremor into account, viz., that seen in disseminated sclerosis.

The chapter on dyspepsia is a most unscientific muddle, and the symptoms of what is called "an acute attack of dyspepsia" are really those of an acute attack of catarrh of the stomach.

We have gone carefully over the whole book. Briefly, it may be stated to consist of a more or less imperfect account of a great number of diseases with a considerable amount of space devoted to treatment, but throughout we fail to observe any evidence of special knowledge or experience which should qualify the author to instruct his brethren; even the sections on treatment consist of a repetition of various well-known means without any critical discussion of their respective merits, or any attempt to guide the inexperienced practitioner in the selection of remedies.

DIFFERENCES IN THE NERVOUS ORGANISATION OF MAN AND WOMAN.*

This is an attempt to define the physiological and pathological differences between men and women. Part I. is taken up with an account of sexual evolution, chiefly interesting in so far as it details the growth of the secondary sexual characteristics, for the theories respecting the factors which determine the development of a particular ovum into a male or female individual are so far merely waste of words. On page 76 we note a slip in the foot-note, where the author says that "baldness is in a large measure caused by wearing hats," in temporary forgetfulness of the fact that it was apparently quite as common in Italy in classic times as it is now. The conclusion to be drawn from Part I. is that man is a polygamous animal whose character is the result of a struggle for existence and for the possession of females; that he is quick, courageous, energetic, impatient, imperious, and selfish. Woman, on the other hand, is passive, quiet, timid, patient, unselfish, and vain. These are rather to be regarded as deductions from the facts or assumed facts of the history of the evolution of each sex, but we can see that to a great extent they fit in with everyday experience.

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* Differences in the Nervous Organisation of Man and Woman: Physiological and Pathological. By Harry Campbell, M.D., B.S. London: H. K. Lewis. 1891.

Part II. deals with the respective liability of men and women to various disorders, in which the author deals with the facts and tries to explain them as in accordance with his theoretical deductions. Among his facts is a table of mortality from a number of diseases, including croup and diphtheria. Considering the uncertainty that exists as to the precise nature of the disease so denoted in all certified cases, these would have been better left. As it is, the results are conflicting; for while the mortality from diphtheria is greater in females, the mortality from croup is greater in males. If we add the figures in the two diseases together, we get very nearly equal numbers; as there must be a good deal of confusion, the worthlessness of these deductions is indicated.

In Part III. the author analyses the mental characteristics of the sexes, the feelings, the intellect, and the will, and concludes in favour of the mental inferiority of woman. He explains the recent success of women in many higher examinations by pointing out the fact that women come to maturity earlier than men, and that girls of 20 or 21 should be compared with men four or five years their seniors in order to obtain a fair comparison of mental capacity.

The book is an interesting and attractive one, especially for those who follow or are attracted by the Spencerian philosophy.

THE LORD OF HUMANITY.*

This book is not of the order usually dealt with in these columns, yet, as an outcome from the pen of a great surgical writer, it may not be amiss to devote a few sentences to a superficial notice of it. As an example of the tendency there is amongst a certain type of our profession to run into the line of metaphysical or even theological literature, the book is worthy of note, because it is evidently the work of a man of wide culture and strong liberality of sentiment, upon whom the evolutionary philosophy of the present day has made a strong impression, yet without upsetting very much in his mind the authorities of tradition.

Without devoting more space and time to it than is possible for this review, it would be extremely difficult to give a full or even a fair idea of the work, even though it extends to only 163 pages; for without shewing evidence of deep scholarship or strong effort to argue for any schismatic scheme of religion, yet the bias of the writer's mind is too evident to please the true sociologist Notwithstanding this, the very breadth of sentiment, together with a certain poetic vagueness which adds a great charm to the writing, the little book is so pleasant as almost to disarm criticism of a harsh or adverse kind Mr. Gant has had a wide field for the observations of humanity, and that he can towards the close of his book sum up the dominant types of human character as he does, says not a little for his powers of observation, as it does equally for the gentleness of his analysis. His division is by no means new, but there is a quaintness in the wording of it, as well as a novelty, which may be an excuse for our repeating it here: "These three dominant types of human character are reflected in the prevalent forms of religious thought and feeling."

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* The Lord of Humanity. By F. J. Gant, F.R.C.S., Consulting Surgeon to the Royal Free Hospital. Second edition. 1891. London: Longmans, Green, and Co.

1. That large class of persons whose religion is the outcome and expression of selfish fear. After enduring months or years of disquietude and gloomy apprehension, with "heart-affrighting hours" and "fear of the lake and pit," as thus expressed in the language of the "Pilgrim's Progress," at last ***they*** see their escape from unspeakable and endless torments of soul and body by the expiation for their sin in the sufferings of a perfectly ***innocent*** Person, and whose agony as the punishment of a ***substitute*** for them shall thus meet the demands of the law of justice, or, possibly, appease an avenging deity.

2. Another class of very ordinary unimaginative human beings, of a commercial character and business turn of mind, would make a bargain of exchange or of loss and gain, keeping a debtor and creditor account; they will do something for something in return — 'good works' for reward; not done as the spontaneous outcome of an absorbing passion, but to procure a fair equivalent. That is ***their*** religion. In view of death, these people say of themselves, and of others like them, that they go from 'works to rewards.'

3. There is yet a third class of persons—how many or how few?—who know nothing of fear and consequent torment in their religion, and certainly, who would scorn to reduce their life, with all their conscious capacities, to the terms of a commercial transaction.

As these three types of human character—fear, commercial loss and gain, and pure trustful love—are the diverse movements of the human heart in religion, there are only two forms of intellect in theology.

1. The barren intellect which, abandoning its prerogative of free enquiry, sees in the highest truth only that which '***ought*** to be because it ***is***;' and

2. The intellect, which moves indeed, but only with the heart in faith, reverses this order of logic; seeing the '***is***, because it ***ought*** to be.'

It would be difficult with justice to the writer, except by devoting far more space and time than we can possibly occupy in these pages, to explain how, with views so nearly approaching those of the Positive school, he shirks difficulties which must increase as succeeding efforts are made to reconcile the old belief with the new. That he succeeds or does not succeed will be determined according to the views of his readers; but one thing is certain, that so long as members of our profession are able to produce in their hours of leisure such literary essays as the present, there will be no fear of their losing hold of the position they have long maintained in general and even in special literature.

GUY'S HOSPITAL REPORTS, 1890.

THE fact that this is the forty-seventh volume of these Reports speaks loudly in favour of the continued interest and value of the work done at Guy's. The Hospital is rich in the best traditions of science, and the present staff has no light task in keeping up the reputation of these Reports. That they have succeeded in producing a highly interesting volume there can be no doubt.

Perhaps the very readable article by Dr. Goodhart entitled "Chiefly concerning Bruits," will be read with most attention, owing in great measure to his views on the causation of the hæmic bruit over the pulmonary area. He argues cogently against the "auricular appendix theory" as well as against Dr. Russell's view that the bruit is due to pressure upon the pulmonary artery by a dilated auricle. His own opinion, which he ably supports, is that the bruit is due to dilatation of the pulmonary artery.

Other articles in this volume deal with cases of interest and importance, while pathology is represented by Mr. Tubby's Report on the "Pathology of Acute Infective Periostitis" and "Acute Necrosis of Growing Bone."

The interest of the book is increased by an appreciative and admirably written memoir of Sir William Gull.

To Guy's men these reports are of the greatest worth, while to the medical world generally they are recommended by the solid and original work they invariably represent.

BURDETT'S HOSPITAL ANNUAL.*

This most useful publication has now reached its third year, and, as might have been expected from its energetic editor, it has considerably extended its scope, whilst there has at the same time been some re-arrangement of matter.

The present volume opens with a general review of medical and allied topics, including the Lords Committee on the Metropolitan Hospitals, Nursing and Nurses' Foods, the National Pension Fund for Nurses; and this is followed by a new chapter on Philanthropic Institutions for the Blind, for Inebriates, Incurables, etc.; whilst at the end of the book is a register of these various institutions, with a few details as to capacity and terms of admission.

Excellent chapters follow on Hospital Saturday, on Nurses and Nursing, on the Pension Fund, and on Hospital Bookkeeping and Accounts.

Of the strictly statistical part we have little to say more than has been said of previous issues, except that the statistics are here fuller and more lucid if possible than before; and we congratulate Mr. Burdett on his useful venture.

ORIGIN, PURPOSE, AND DESTINY OF MAN†.

This little book is stated in the preface to be a continuation of the author's work entitled "Rationalism in Medicine," published in 1885, and "which was so flatteringly reviewed by medical journals in different parts of the world." But even the present volume does not exhaust the subject, and we are promised yet another, "which will give the formulation of the means that can be adopted in the treatment of those diseases which are now the *opprobria medicorum.*"

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* Burdett's Hospital Annual, and Year-book of Philanthropy 1891-92. Edited by Henry C. Burdett. London: The Hospital (Limited), 140, Strand, W C.

† Origin, Purpose, and Destiny of Man: or, Philosophy of the Three Ethers. By William Thornton. Boston: Published by the Author, 1891.

In his introduction the author tells us that "having a love for philosophy and being engaged in the medical profession, I had the best of opportunities for investigation, the results of which it is the intention of this volume to set forth, so that others engaged in scientific pursuit may have the author's contribution to the advancement of scientific thought and research " Hence the publication of this *novum organum*, based on the theory of the three ethers of which the first is Life; the second "a composition of the potentialities of heat, light, electricity, and magnetism;" and the third "a material nucleus which permits of the action of the other two ethers." This may pass for science in America, but we are afraid in Europe it will be regarded as a mild and not very interesting form of insanity. We have looked through the four chapters of which the book is composed, and do not see any evidence that the author has even a moderate acquaintance with that science he pretends to expound.

PRESCRIBING AND TREATMENT IN THE DISEASES OF INFANTS AND CHILDREN.*

THIS is a very useful little book, arranged on the plan of Martindale's Extra Pharmacopæia, with this difference, that the index of drugs takes up only about a third of the book, the remainder of the space being entirely devoted to an index of diseases and their treatment, with the exception of a few pages at the end, in which directions are given for making the ordinary dietetic preparations, such as beef-tea, brandy and egg mixture, peptonised milk, raw meat juice, whey, &c. We have looked through its pages, and can express the opinion that the views expressed have been carefully collated, and will be found to afford much information to young practitioners.

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* Prescribing and Treatment in the Diseases of Infants and Children. By Philip E. Muskett. Edinburgh and London : Young J. Pentland. 1891.

THE LEEWARD ISLANDS MEDICAL JOURNAL.*

By the liberality of His Excellency Sir W. F. Haynes Smith, Governor and Commander-in-Chief of the Colony of the Leeward Islands, the recently constituted branch of the British Medical Association existing in those islands has been enabled to publish its proceedings in book form at the hands of Messrs. Churchill. It cannot be said that the volume contains any paper of special merit, but as a record of first attempts to compare experiences upon local diseases it is of interest. We trust that the series so begun will be continued, and we look forward with pleasure to next year's issue. The present volume contains eleven papers, any one of which would have been welcome in the columns of the British Medical Journal. Perhaps the most noteworthy are Dr. McHattie's paper on Bilious, Remittent, and Yellow Fevers; Mr. Boon's short contribution on the operation of Elephantiasis Scroti; and Dr. Alford Nicholls' Practical Notes on the Treatment of Dysentery.

DIPHTHERIA.†

This volume contains a complete reprint of the Milroy Lectures for 1891, delivered before the Royal College of Physicians of London. It may be fairly said to contain a very complete study of the general conditions under which outbreaks of diphtheria occur. Beyond this the author does not go. It is essentially the work of a Local Government Inspector. The main point which Dr. Thorne Thorne labours to bring out is the relation of diphtheria to damp sub-soils, and he believes that cases of apparently simple sore throat may exhibit "a progressive development of the property of infectiveness." But his conclusions number eighteen in all and are too long to be quoted here, except perhaps one other, in which he expresses the view that there can be no reasonable doubt of the fact that the disease has often been conveyed through the medium of milk. The book is an honest and convincing one.

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* The Leeward Islands Medical Journal: being the Proceedings of the Leeward Islands Branch of the British Medical Association, 1891. Edited by H. A. Alford Nicholls, M.D., F.L.S. London: J. and A. Churchill. 1891.

† Diphtheria: its Natural History and Prevention. By R. Thorne Thorne, M.B. Lond., F.R.C.P. Lond., F.R.S. London: Macmillan and Co. 1891.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES.*

THIS Annual has developed into a stupendous example of American publishing enterprise. It now consists of five large volumes, containing probably 2,000 pages of well-arranged, well-printed, and well-illustrated matter. We have looked at particular subjects with which we are familiar, and confess with pleasure that the work has been done admirably and reflects great credit on the editor and his associates. This Annual constitutes a library in itself, and the man who puts it on his shelves year after year need trouble himself to keep no other record of periodical medical literature.

RECENT MATERIA MEDICA.†

THIS work consists of a list of new drugs arranged alphabetically, with brief information respecting their source, characteristics, and therapeutics. It seems to be carefully compiled, and will be found useful in much the same way as Squire's Companion to the Pharmacopœia.

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* Annual of the Universal Medical Sciences. Edited by Charles E. Sajous. M.D. Philadelphia, New York, Chicago, Atlanta, and London: F. A. Davis. 1891.

† Recent Materia Medica: Notes on their Origin and Therapeutics. Fourth Edition. By F. Harwood Lescher, F.C.S. London: J. and A. Churchill. 1891.

COOKERY FOR THE DIABETIC.*

This book is a step in the right direction, and should be in the hands of everyone who has to prepare food for a diabetic patient. It is cheap, and will be found to contain many useful hints. The only fault we have to find with it is that the rules as to what the patient may and what he may not eat are laid down far too absolutely to be applicable to all cases.

New Inventions, Drugs, etc.

Burroughs, Wellcome and Co's. Visiting List.—We have received a copy of the A B C Medical Diary and Visiting List for 1892, which is very similar to the Diary issued for many years past. One important addition however has been made, namely, the columns wherein can be inserted the amount owing by the patient to the medical practitioner, thus enabling him, if called for, to state at once the amount due and receive payment. Several well-known general medical practitioners have expressed the opinion that such an addition would prevent, to a large extent, the bad debts incurred through delay in sending in statements. Another improvement in the Diary is the pattern of tuck which has been adopted. It is thought that by inserting the whole of the flap in the pocket it cannot become torn, nor can the edges of the book become in any way crumpled. The other pattern of the Diary is covered in brocaded silk, and is intended for insertion in a wallet with space for letters, postage stamps, cards, etc. This Diary contains considerably less printed matter than the 1891 edition, and consequently is less bulky and more convenient for the pocket. The few pages of reference tables are printed on very tough and thin paper, so that they do not add very much to the thickness of the volume.

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* Cookery for the Diabetic. By W. H. and Mrs. Poole. With Preface by Dr. Pavy. London : Longmans, Green, and Co.

BENZOZOL IN PHTHISIS—We have received a sample bottle of Benzozol or Benzoyl Guaiacol. This drug has been employed with success in the In patient department of the Mariahilf Hospital, Aix-la-Chapelle, by Dr. Schervier. The Benzozol was tried in ten cases of incipient phthisis, and decided improvement took place in each case. Benzozol is regarded by him to be an agreeable and harmless substitute for Creosote, beneficially influencing the general nutrition, and consequently increasing the resistance of the patient to the disease. Benzozol is decomposed in the digestive tract into Guaiacol and Benzoic acid, and the former can be detected in the urine and saliva within half an hour after ingestion. The drug is not soluble in water and is decomposed by hot water, so that it must be given in powder.

New Books, etc., Received.

Vol xii., Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army. Washington : Government Printing Office. 1891.

Charles Letts and Co.'s A B C Medical Diary and Visiting List for 1892.

Diagram of the Mouth, Fauces, and Larynx, for Clinical Purposes. J. T. Balcomb, 23, Southampton Buildings, Chancery Lane, W.C.

The Organic Analysis of Potable Waters. By J. A. BLAIR, M.B. London: J. and A. Churchill.

The A B C of Swedish Educational Gymnastics. By HARTVIGG NISSEN. London: F. A Davis.

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